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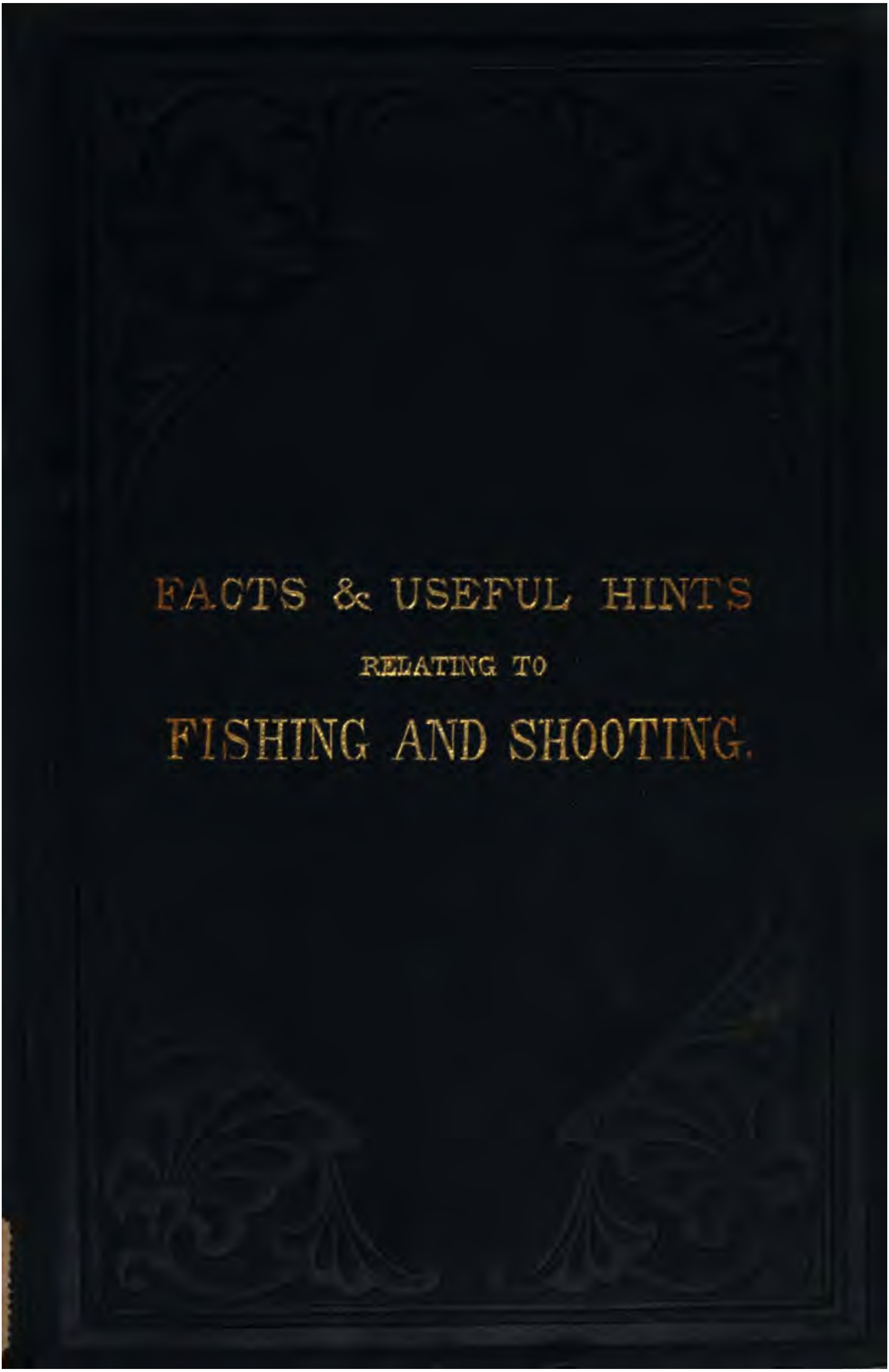

FACTS & USEFUL HINTS

RELATING TO

FISHING AND SHOOTING.

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FACTS AND USEFUL HINTS

RELATING TO

FISHING AND SHOOTING:

BEING

A COLLECTION OF VARIOUS METHODS FOR CAPTURING
BIRDS, BEASTS, VERMIN, AND FISH;

TOGETHER WITH

A GREAT VARIETY OF RECIPES OF ALL KINDS USEFUL TO THE

FISHERMAN AND SPORTSMAN.

TO WHICH IS ADDED

A LIST OF RECIPES FOR THE MANAGEMENT
AND CURE OF DOGS IN DISEASE.

THIRD EDITION.

BIBLIOTHECA BODLEIANA

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PREFACE.

If success be the measure of merit, we should feel much flattered. It but seldom falls to the lot of any work that the demand for it should exceed its first issue. "Facts and Useful Hints relating to Fishing and Shooting" is of the fortunate class. Two large editions have been exhausted in five years, and now we are writing a few words of introduction to our third.

We have in this issue departed in no wise from the scheme with which we started. Information under the different heads has been amplified, and some erroneous matter dispensed with, whilst many fresh and important articles have been added. Our pleasant task is now ended; and whilst we write *finis* to our work we venture to express a hope that even the most skilled sportsman may find something to learn from "Facts and Useful Hints relating to Fishing and Shooting."

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FACTS AND USEFUL HINTS

RELATING TO

FISHING AND SHOOTING.

FISHING.

BAITS.

ARTIFICIAL BAITS, TO MAKE.

1. Cut a pattern in paper the size wanted, and in shape like two fish joined in the middle of the back; then get an old india-rubber golosh and cut it out of that. Also cut out a thin piece of sheet-lead of the shape, but somewhat less in size than one-half of the pattern, and stitch the lead between the two sides of india-rubber; then, with a little melted gutta-percha and a warm iron, cover over the stitches only, fix a treble hook to some gimp, draw it through from the tail to the head; also a double hook on the back, and another on the belly. When finished thus far, give the india-rubber one coat of white paint; when just dry, lay on some silver leaf, then one coat of thin varnish, to prevent the silver leaf from tarnishing; then paint the back of the fish a little darker, chequer it, and finish from real fish. The lead inside causes the artificial fish to remain in any position you curve it for spinning; and the fish, being hollow, gives way to the hooks whenever struck by a pike or other fish.

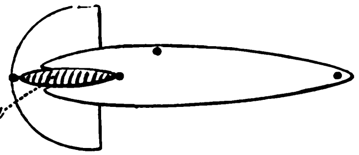
2. Take a piece of gurnet-skin, double it, and shape it as a fish; then take a flight of hooks, consisting of a double hook at the tail and a single one an inch or two above it, and place them inside the folds, the points of course being out; then close the skin, and cement it with patent marine glue. The double hooks at the tail are like the natural tail; the single hook represents the dorsal fin. The gut can be leaded anywhere. The bait can be made in a few minutes. The shanks of the hooks are concealed; when in the water the scales of the skin glisten like those of the natural fish; it can be made of any size, to suit the water and the fish.

3. Let a model be cut out of cork or wood, and covered with the skin from the throat of a humming-bird, one to imitate the back of the fish from the ruby-throated, and another for the under side or belly from an emerald or silvery skin. A metallic tail could be added to make the fish spin, and lead to sink it to a proper depth; it could also be varnished to prevent any injury to the feathers.

4. *Lead Minnow.*—Make a cast in chalk of the required size, and run off a dozen or two lead casts; bend the tail to the required spinning turn, drill a hole or two for the hooks, varnish, and paint to taste; a scrape of a knife down the side will make it as bright as need be.

5. *Tin Minnow.*—Cut a piece of tin of the shape A. with holes punched to fasten the hooks and lead (*a*) (hollow lead on each side). By turning the wings, and giving the body a twist, as at B, it can be made to spin at any speed. If a more elaborate bait is required the tin may be cut long and narrow, and twisted as C. If the bait be too bright, a little varnish or liquid glue will obviate the objection.

A



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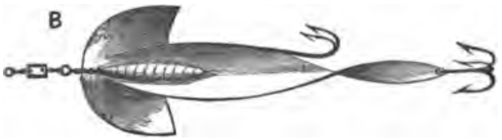

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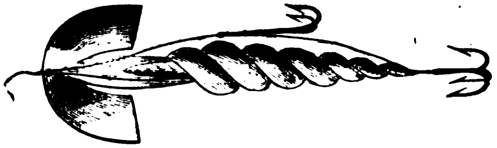


6. *Gutta-percha Minnow.*—Take 5in. of salmon-gut and whip strongly on to it three series of treble-welded hooks, leaving an interval of about 1in. between each triangle. Lay a coat of varnish on the whipping, and set aside.

Take a leaden tube (weight about 4dwts.—a pike trace lead of twice that weight, cut in half, will be just the thing) and string it on a second piece of gut 6in. long. Bring the two ends of the gut together, and whip a few turns of your silk a little above the broad end of the lead, which should point upwards towards the ends of the gut.

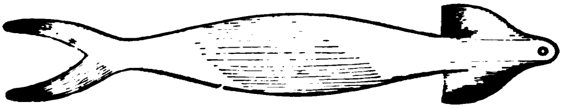
Then drop into hot water a piece of gutta-percha, about 2dwts. in weight; when it has become perfectly soft and plastic (which will be in a minute or two—if left too long it becomes sticky) withdraw it from the water, flatten it out between the fingers, place the leaded gut in the centre of it, close the gutta-percha round on all sides, and proceed to mould it roughly into the shape of the natural fish, leaving about 1in. of the gut projecting beyond the head. This being done, dip the gutta-percha again into the water, and when soft, slit it (with the fingers) about 1in. from the head downwards, and insert the metal wings (which should be about 1in. in width). To effect this it will be found necessary to heat the sharp point of a pen-blade, and press the gutta-percha firmly and smoothly all round the metal. The last touches must now be given to the shape of the fish, and to get greater evenness and finish it must be dipped again and again in the water, till all inequalities and inaccuracies have disappeared beneath the pressure of the fingers in moulding. A tail may be produced, either by flattening out the gutta-percha till it becomes thin and transparent, and then cutting it into shape with the scissors, or by inserting a separate tail, made of thin sheet india-rubber or tin.

The body of the minnow being thus completed, with a heated needle make two small apertures, one on each side of the head, and insert glass beads for eyes, using anew the heated pen-blade to bring the gutta-percha close up to the glass, and fix them firmly. It is now time to apply the gold or silver leaf, for which purpose hold the minnow at a discreet distance over the flame of a candle, until the surface has become slightly glutinous, when apply the leaf, which will adhere readily; or a coat of varnish may be laid on, and the leaf applied when the surface is all but dry. Gold size will serve the same purpose, but requires more time. Cover the entire bait, and when quite hard and cold brush off all superfluous leaf with a dry camel's hair brush. Now apply the colour, which may consist either of the opaque black and brown varnishes alone, or of a little oil colour mixed up with them.

As a last operation, pass the ends of the gut (which have been projecting all this while beyond the head of the fish) through the ring of the swivel, and whip down (bring in the whipping close to the head); then take a foot of salmon gut, pass the end through the upper ring of the swivel, bend it up, and side by side with it place the end of the flight of hooks; whip all together with extra care and strength, and apply varnish. You may suppress wings altogether. Flatten out the gutta-percha into a stiff broad tail, slit it down the middle, and bend the two halves opposite ways, by which means you will obtain a spinning apparatus.

Or you may whip your three triangles on to three separate pieces of gut, bring one hook out at the tail, and the other two, with about 2in. of gut, on each side of the fish, in the neighbourhood of the wings; or, you may imitate the pectoral-fin bait, which revolves round the gut as well as with the swivels, a result obtained by passing a wire, thicker than the gut, through the lead in the first instance, and when the fish is shaped, but still soft, pulling the wire backwards and forwards till a tube is formed sufficiently large to admit of the wire being withdrawn and the gut substituted in its place.

The following, cut out of copper, is readily made, and killing. If one side be silvered the bait is much improved:—



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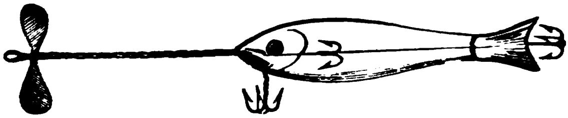


From the mouth of the bait have a twisted copper wire of about 5in. long; at the end of this is a "fan" or "screw," then comes the gimp, &c. The spinning power of this arrangement is first-rate, and has the desired advantage of letting the pike (when he strikes) get the full complement of hooks in his mouth before he finds any resistance, and may perhaps even hook himself.

A correspondent recommends the following modification, he says "The fan should be not larger than necessary, and fixed fourteen or eighteen inches above the bait. There are many advantages in the fan properly used. The bait may be made to spin fast or slow, can be spun down with the stream or in a pond without drawing it too rapidly through the water, It can be used either with a set of hooks or with a single one, and either with natural or artificial bait. Now, the disadvantage is when the fan is used in a very rapid stream, as a mill-tail, the great pressure on the gut, between the fan and bait, causing it to twist and kink as soon as it becomes soft. The only remedy is to replace the hook with a new one. The first will be fit for re-use as soon as the gut becomes dry and firm. Swivels should always be oiled before a day's fishing, the line of plaited silk well dressed. The bait, whether natural or artificial, is to be used straight, no turn of the tail being required, and when properly put on should spin perfectly straight in the water."

Another correspondent advises that a small triangle should be fixed to the fan, so that if a fish should strike at it he would stand a chance of being caught.

ARTIFICIAL FLIES.

Grayling Flies.

1. Body, green and yellow fibres of a parrot's feather; wings, dark partridge hackle.

2. Body, copper peacock harl and gold twist; wings, dark partridge hackle.

3. Body, lemon coloured mohair; legs, very pale blue hackle; wings, young starling's wing feather; tail, two fibres of the same hackle. Hook, No. 11 or 12. Good for the Itchin in the early spring.

4. The same as above with the addition of a small quantity of sandy-coloured hare's fur mixed into the body with a gold tag. Hook, No. 11 or 12.

Pike Flies.

1. Make a cylindrical body of cork, of sufficient dimensions to keep the fly when finished floating lightly on the surface, and cut a groove on the under side for half its length, in which secure by whipping with strong silk a pair of lightish wired double hooks attached to fine gimp. Then in a hole bored transversely through the cork at about one-third of its length from the head, fix, by means of melted resinous cement, or a few laps of silk run backward and forward through the coil and over the cork, a small spiral helix of fine steel wire about an inch and a quarter in length, by its centre, so that the extremities may extend half an inch each side. The extremities of the coil may be pointed a little backwards towards the tail of the fly, so as to give a proper set to the wings, and be retained at the desired angle by a lapping of silk. A Lilliputian staple of fine wire is next to be fixed transversely into the upper part of the cork immediately between the wings. This constitutes the frame-work of the fly; and the body may be covered with dubbings, and the stems of the feathers intended for wings fixed to the under side of the helices by passing lappings of silk over them and between the coils. The fly being thus far completed, the wings will lie extended horizontally on each side when in their normal position. Now the use of the helical springs is to enable the angler to impart motion to the wings of the fly at pleasure, when it is on the surface of the water, so as to cause it to imitate the motions of a living object—small bird or huge butterfly, whichever the pike chooses; and it is accomplished thus. A

short piece of stout salmon gut is to be fastened to the extremity of each helix, and its other end passed through the small staple between the wings, and the two knotted together, so far beyond the latter that the knot may not come in contact with it when the wings are fully extended. To the junction of what we will term the wing halyards, about a couple of inches more of gut is to be fastened, the other extremity of which must be whipped to the gimp at such a part as that, when both the gimp and the gut halyards are drawn tight, the wings may be raised by the latter into a vertical position, and nearly close together above the back of the fly. It will now be evident, that as the gut halyard is shorter than the gimp when the springs remain in a state of rest, the wings which are attached to them can be made to flap up and down according as the line is pulled or relaxed without the main line acting upon the fly at all until after it is fixed in the jaws of a fish, when the helices, forming universal springs in every direction, will not be easily damaged by a little rough usage.

2. The green eye of the peacock's feather, tied on a double hook, is the most successful; the body of the fly being composed of an artificial or stuffed mouse. The colder the day, the better the sport—indeed, a thin coating of ice is to be preferred; and again, should you fish from a boat, the same should be propelled at a good pace, say five knots, causing the flies to scud along the surface of the water.

Salmon Flies.

1. Body, blue, silver tinsel; wings, golden pheasant, mallard, and jay, Good on the Swedish rivers, and for lake trout.

2. Body, purple silk ribbed with gold; hackle, blue dyed; wing, mallard, peacock, and green parrot mixed; tail, same as wing. Good at Galway and Ballina.

3. Body, crimson silk ribbed with gold, with a little orange next the tail; hackle, black; head, black ostrich harl; jay under wing; wing, peacock, mallard, and golden pheasant mixed; tail, brown mallard, and white cockatoo's top-knot mixed with or without golden pheasant's top-knot.

4. Body, purple silk ribbed with silver; hackle, black and jays; wings, brown mallard, parrot, and golden pheasant's breast feather mixed; feelers, macaw; head, black ostrich harl. Good in Galway and Ballina.

5. Body and head, black; wing, brown mallard and golden pheasant's breast feather mixed; feelers, two strands of macaw's tail feather. Good in Galway.

6. Body, a black ostrich harl tag with a pink floss silk body; tail, strands of the golden pheasant's breast feather mixed with a few strands of guinea fowl or green parrot; hackle, jay's wing feather; wing, same as tail, with some brown mallard and green parrot added. Good in Galway from June to the end of the season.

7. Body, black floss silk, then orange, then black again at the head, with a turn of black ostrich harl; tail, brown mallard and green parrot mixed, or brown mallard and golden pheasant's breast feather; wing, same as tail. Good in Galway and Ballina.

8. Some make the wing of brown mallard, with strands of the guinea fowl speckled feather, and two strands of the macaw tail feather for feelers from the back of the head. Good in Galway.

9. Body, orange floss silk ribbed with gold, with a tag of black ostrich harl; tail, strands of the golden pheasant's breast feather and brown mallard, or golden pheasant's top knot; hackle, grouse, or the bright feather on the breast of the common pheasant.

10 . Body, orange silk ribbed with silver, tipped with black ostrich harl; hackle, black and jay, or grouse; wing, mallard, parrot, and pheasant mixed with or without golden pheasant topping; tail, same as wing. Good in Galway and Ballina.

11. Hook, BB. Body, yellow mohair and silver tinsel; yellow hackle; wing, saddle feather of golden pheasant and topping of ditto; partridge hackle over wing; tail, golden pheasant topping. Good for Norway, especially in the Undal.

12. Hook, No. 9. Body, light blue mohair and silver tinsel; shoulder, orange hackle; wing, cock of the rock, from the lower part of the back, with two golden pheasant saddle feathers over, and hackle of the same; tail, golden pheasant topping. Good in Norway.

13. Hook, No. 8. Body, blue and claret mohair, silver tinsel; claret hackle; wing, yellow macaw, with cock of the rock hackle over; tail, golden pheasant topping. Good for Norway.

14. Body, orange mohair, gold tinsel; orange hackle; wings, yellow macaw and golden pheasant topping; wing feathers of Argus pheasant; wing, cover, partridge hackle; tail, golden pheasant topping. Good in Norway.

15. Body, blue mohair, silver tinsel; blue hackle; wing, yellow macaw; wing cover, saddle feather of red macaw; tail, golden pheasant topping. An excellent fly in Norway.

16. Body, pink floss silk, silver tinsel; yellow hackle; wing, Argus pheasant and golden pheasant tail feathers; wing cover, dark grouse hackle, and a blue mohair head; tail, golden pheasant topping. Good in Norway.

17. Body, orange floss silk, gold tinsel: yellow hackle; wing, yellow macaw. Argus pheasant, and golden pheasant tail feathers; wing cover, jay and blue macaw mixed; tail, golden pheasant topping. Good in Norway.

18. *Swedish Fly.*—Black mohair body, black hackle, black wings, black tail with white tip, and orange-coloured head.

19. Gold tip, pale blue sprigs of Indian jay, and flamingo, or ibis, or red

macaw fibres for tail, orange wool body, brown hackle, long and full all the way up; gold tinsel sparingly, and brown mottled Turkey wing; black head. Good in Wales.

20. Tip and tail as before, light orange silk body; yellow hackle long and full, gold twist sparingly, and dirty red hackle at shoulder, mottled turkey wing. Good in Wales.

21. Tail and tip as before; dirty yellow wool body; golden olive hackle; gold twist fine, large bunch of peacock's harl for wings. Good in Wales.

22. Gold tip, two red macaw fibres, and a gold pheasant's topping for tail; dark brown wool body; golden olive (rather inclining to orange) hackle, with black tints to the fibres, spare gold twist, turkey wing. Good in Wales.

23. Gold pheasant tippet tail, dark brown wool body, bronzed olive hackle, with darkish dirty green tips, turkey wing, no tinsel. Good in Wales.

24. Gold tip, fancy tail of two sprigs of blue macaw, light yellow toucan feather and small green parrot feather (N.B. This tail is not indispensable) —two twists of ostrich here (black) over, yellow silk body, gold tinsel, and light smoky blue hackle with golden tips; wing, two bittern's hackles.

All the hackles of the above last six are dressed very full and long, and most of the bodies are fattish. They are dressed on good-sized hooks—about 7 or 8, salmon size; but they might be dressed much smaller for the summer with advantage. Another good Usk fly has a bit of yellow floss silk for tail, a pale yellow or lemon body, pale blue or dun hackle, and wings of either the striped feathers under a hawk's, snipe's, or woodcock's wing, dyed pale yellow.

25. *Silver Body.*—Tag, fine silver twist and yellow orange silk; tail, small topping, and the point of small jungle cock feathers; two turns of black ostrich over body, composed entirely of broad silver tinsel, ribbed with silver twist, hackled with a greyish white hackle, with a black streak in the middle and black at the lips, grey mallard wound hacklewise at shoulder; wing mixed of brown and grey mallard gallina, two or three strands of golden pheasant tail, a like number of green parrot, pale blue or lilac macaw, ibis, and bustard, about a score of strands of golden pheasant ruff in the centre, a strip of wood duck on either side, one topping over all, and blue macaw feelers, black ostrich head.

Sea Flies.

Bass Fly.—Tail, scarlet ibis; body, silver tinsel; legs, a mixture of red and blue mohair, tied in at the shoulder—this being preferable to a hackle, as it cannot be cut like a hackle by the sharp teeth of the bass; wing a slip of bustard, and over it slips of white, red, yellow, and olive swan, the white predominating.

Sea-Trout Flies.

1. Tail, golden pheasant topping or toucan; tag, gold twist, broadish rib of orange silk, black ostrich harl above; silver tinsel body, with a rib of silver thread; orange legs and greydrake wing, put on Tweed Fashion; black head.

2. Hook No. 4 or 5; green peacock tag, three fibres of guinea-fowl for tail, pale silk body, ribbed with fine silver tinsel, claret hackle, landrail wing.

3. Hook No. 4 or 5; body dark blue silk, three fibres of mallard for tail, ribbed with fine gold thread, claret hackle, wing duck underwing and brown turkey mixed.

4. Hook No. 4; body half black wool and half green peacock, ribbed with gold tinsel, black hackle, wings starling or jay's wing.

5. Wing, grey mallard; hackle, black; body, black with red shoulder; tip, orange.

6. Wing, dun turkey; hackle, black; body, red and black with orange tip.

7. Wing, white; body, black or blue with orange tag; hackle, black or blue.

Trout Flies.

1. Body, lemon-coloured mohair; legs, very pale blue hackle; wings, young starling's wing feather; tail, two fibres of the same hackle. Hook, No. 11 or 12.

2. The same, with the addition of a small quantity of the sandy-coloured fur of the hare mixed with the lemon-coloured mohair for the body, and one turn of gold twist at the tail. Hook, No. 11 or 12.

3. Body, dark red silk; wings, partridge feather; legs, dark red hackle and two fibres of red hackle for the tail.

4. Body, orange mohair; legs, yellow hackle; wings, the red feather of the pheasant's tail. Hook, No. 9 or 10. Good in the Welsh lakes.

5. Body, peacock's harl; legs, black hackle; wings, water-hen. Hook No. 7 or 8. Good in the Welsh lakes.

6. Body, peacock's harl; legs, black hackle; wings, the copper-coloured, feather of the mallard. Hook, No. 7. Good in the Welsh lakes.

7. An excellent early fly on some waters is a largish one with a red-brown body, legs of the same shade, and wings out of the long tail feathers of the golden pheasant. It is as large as the March Brown.

8. One of the best flies for the spring is a small one, a ginger brown body, brown partridge hackle legs, and partridge tail wing, not the tawny feather.

9. Body, light-brown mohair mixed with hare's-ear fur; wings, hen pheasant's wing; legs, grey throat-feather of partridge; tail, mallard's fibres. Hook, No. 10 or 11.

10. Body, reddish brown mohair; wings, woodcock's wing. Hooks, No. 9 and 10.

11. Body, fawn coloured floss silk; wings, yellow brown hen's wing; legs, ginger hackle.

12. Body, seal's fur; wings, landrail, long, large, and flat; legs, red-brown hackle.

13. Body, orange floss silk ribbed or not with gold; legs, grouse hackle. A good Irish fly.

14. Body, dark mulberry floss silk or peacock's harl; wings, brown mallard; legs, dark amber hackle or blackcock's hackle.

15. Body, bronze floss silk, full and tapering; wings, red tail feather of partridge; legs, black hackle.

16. Body, black ostrich harl; legs, light dun hackle tinged with brown.

17. Body, black horse hair; legs, black ostrich harl with small black hackle; wings, dark starling.

18. Body, pale yellow floss silk ribbed with olive green; legs, ginger hackle; wing, starling.

19. Body, grey hackle ribbed with silver thread; wings, partridge.

20. Body, yellow floss silk; legs, wren's hackle; wings, partridge.

21. Body, purple floss silk; legs, wren's hackle; wings, partridge.

22. Body, yellow floss silk; legs, black rooted red hackle; wings, brown mallard.

24. Body, pale or gosling green seal's fur body; legs, yellow dun hackle; wings, canary's wing.

25. Body, fur from hare's poll; legs, smoky-blue hackle; wings, light starling. Good in Devon.

26. Body, pale violet floss silk, bound with pale yellow; wing, white feather of mallard. This fly is good in February, early in the day.

27. Body, hare's-ear with a green peacock's feather at the tail; wings, from the outer fibre of the pheasant's wing; legs, partridge. Good in Hampshire and the Test.

28. *Alder-fly.*—Body, bronze coloured floss silk or bronze peacock's harl, dressed full and tapering; legs and tail, black hackle; wings, flat and two sets,—lower, starling's wing, upper, landrail's wing; partridge red tail feather or hen pheasant's ditto. Good all over Great Britain. The body should be dressed of the most copper-coloured peacock's harls, dressed fat; legs a dirty blue dun hackle, with a black streak down the centre; wing, the brown mottled feather on a game hen's rump. Hook, No. 7 or 8.

29. *Ant-fly.*—Body, brown and red camlet; wing, greyest feather of a starling or rock pigeon. These may be found in their natural state by digging into an ant's nest, and are good to dape with. They may be kept in a pot filled with moss and dirt.

30. *Apple Green..*—Body, apple-green floss silk, inclining to yellow; wings, light starling; legs and tail, light-red hackle. Very killing in Hampshire.

31. *Black Ant.*—Peacock and black ostrich harl mixed, with a large tag of the same; wings, dark starling; legs, black hackle.

32. *Black Gnat.*—Body, black ostrich harl; wings, dark starling; legs, black hackle.

33. Dress on a No. 12 or 13 hook. Body of moorhen's down tied with black twist; a white mallard's feather for wing. This is, on sunny days, a good fly.

34. *Black Hackle.*—Body, black harl of an ostrich, and ruddy harl of a peacock, bound with black silk; black hackle over all.

35. *Blue Blow.*—Body, mole's fur; wing, tomtit's wing.

36. *Blue Dun.*—Body, water-rat's fur, ribbed with straw-coloured silk; legs, dun hackle; wings, starling. Good in Devon.

37. *Blue Dun Cocktail.*—Dark fur from a hare's ear for body; wings, dark starling or fieldfare; tail, fibres of a red hackle. Good in March.

38. *Blue-fly.*—Body, light fox's fur, ribbed with gold; hackle, light blue. Good on the Exe.

39. *Brown Hackle*—Body, brownish harl of a peacock, bound with ruddy silk; hackle of a brown hen over all.

40. *Carshalton Cocktail.*—Body, blue fur mixed with fur from a hare's ear and yellow mohair; wings, starling; legs, light blue; tail, grizzled hackle.

41. Body, light blue fur; wings, the inside of a teal's wing; legs, dark blue hackle; tail, white cock's hackle. These two are good for the Wandle in Hampshire.

42. *Coachman.*—Body, green peacock's harl; wings, white; legs, red hackle. A good fly generally, but especially in the streams of Kent, Middlesex, and Hertford. This is also, when dressed large, a good chub fly.

43. *Cow-dung.*—Body, light brown and yellow floss silk mixed, tied with brown silk; wing, dark-brown feather of a mallard or partridge-tail. More suited for May than April, especially just before the May-fly.

44. *Dark Blue.*—Body, rat's fur, ribbed with gold; tail, red cock's hackle; wings, brown tail feather of partridge; legs, dark red cock's hackle. Good for the Exe and Culm on cold days.

45. *Dark Hare's Ear.*—Body, dark hare's ear; wings, woodcock; legs, fur picked out at the shoulder; tail, two fibres of the brown mottled mallard's feather.

46. *Dark Olive Hare's Ear.*—Body, fur from a hare's ear, mixed with a little olive mohair picked out at the shoulder, tipped with gold; wing, light starling; tail, red fibres.

47. *Death Drake.*—Body, ostrich harl mixed with peacock's, silver twist, black hackle; wing, of the dark copper feather of a mallard.

48. *Drake.*—A middling-sized hook; yellow floss silk body, bound with dark yellow silk; tail, three rabbit whisks; wing, of a guinea fowl's feather from the breast.

49. *Dun Hackle.*—Body, yellow floss silk, with or without a gold tag; tail, two fibres light red hackle; legs, honey dun hackle.

50. *February Red.*—Body, red squirrel's fur mixed with claret-coloured mohair, red at the tail; wings, hen pheasant's wing; legs, copper hackle of blue cock. A good fly for the Exmoor and Devon streams; also on Usk.

51. *Fern-fly.*—Body, peacock's harl, bound with green silk; wing, fieldfare's tail feather.

52. Body, orange floss silk ribbed or not with gold; wings, flat mottled partridge wing; legs, red cock's hackle.

53. *Golden Dun Midge.*—Body, olive floss silk, ribbed with gold; wings, light starling; legs, blue hackle. Good in Hampshire.

54. *Governor.*—Body, copper-coloured peacock's harl ribbed with gold, and tipped with scarlet (or orange; legs, red or ginger; wings, light pheasant's.

55. *Grannom.*—Body, rat's fur, with a green silk tag; hackle, grizzled cock's; wings, woodcock. Good on the Exe.

56. Body, hare's face left rough, with a tag of green floss silk; wing, partridge's wing dressed full; legs, pale ginger.

57. Body, hare's ear and face, left rough, on brown silk; wings (made full), partridge's wing; legs, ginger hen's hackle. Good in Devon.

58. *Green Drake.*—Body, camel's hair mixed with hog's down, bound with yellow silk or gold twist; three cat's whisks for tail; wing of a light mallard's feather dyed yellow.

59. *Green Rail.*—Body, yellowish green silk; wings, red landrail's wing. Hook, No. 9 and 10.

60. *Grey Drake.*—Body, hog's down mixed with black terrier fur, bound or ribbed with black twist; three whisks of rabbit for tail; wing, of a dark grey feather of a mallard.

61. *Grey Midge.*—Body, the down of a mole, warped with grey silk; tail, three grey whisks; wing, the greyest feather of a fieldfare.

62. *Grey Rail.*—Body, water-rat's fur; wings, landrail. Hook, No. 9 or 10. Kills well on the Rannoch, Scotland, dressed larger.

63. *Grizzled Palmer.*—Body, peacock's harl, ribbed with silver; hackle, grizzled cock. Good on the Exe.

64. *Hawthorn.*—Body, black silk; hackle, black; wings, starling's.

65. Body, black ostrich harl clipped in the fibre and dressed long and spare; wings, sea swallow, or pinion feather of the jay.

66. Body grey and brown dubbing, mixed with a little orange towards the tail; wing, brown tail feather of woodcock, partridge, or brown hen. By some this is called the Oak-fly, by others the Ash-fly. Will not be found unsuited on gloomy days.

67. *House-fly.*—Brimstone silk; hackle, black; wing, blackbird's.

68. *House Gnat* must be dressed on No. 12 hook, with a body of brown and violet camlet mixed, and grey wing of a fieldfare or starling.

69. *Iron Blue.*—Body, blue mole's fur, ribbed with reddish-brown floss silk; tail, yellow dun hackle; wings, moorhen; good for Devon. Again, body of dark blue (approaching almost to black) fur or silk, with fine buff thread warped up; legs, dark blue dun hackle, grizzled at tips; wings, any small, fine, dark feathers (almost black at the butt), and dressed very upright; two whisks of the hackle for tail; No. 10 hook.

70. *Jenny Spinner.*—Body, white floss silk with a brown silk tag; legs, very light blue hackle.

71. *Judicious Hooker.*—Hook, No. 6 or 8, armed with dark-yellow silk; tail, two hairs of black rabbit's whiskers; body, a slight strip of good india-rubber tied on at the tail and wound up evenly stretched to the head; wings, brown mallard and widgeon mottled feathers mixed; legs, a few fibres of the same. A very killing fly in Brittany.

72. *Killer.*—Body, tan hair of a terrier, with woodcock's down, well mixed, tied with yellow twist; the feather of a cock pheasant's tail for wing. This is one of the best killers in a quick running stream.

73. *Light Hare's Ear.*—Body, light fur from a hare's ear; wings, light starling; tail, dun or ginger hackle fibres. Good in March.

74. *Light Olive Hare's Ear.*—Same as above, with some olive mohair added to the body. Good in March.

75. *Lion-fly.*—Body, orange silk and squirrel's fur, with gold-coloured mohair at the shoulder; wing, landrail.

76. *Little Dark Spinner.*—Body, mulberry floss silk ribbed with purple; legs and tail, purple stained hackle; wings, starling's wing.

77. *Little Yellow May Dun.*—Body, pale ginger fur from a hare's neck ribbed with yellow silk; tail, dun hackle fibre; wings, mallard dyed olive green; legs, light dun hackle stained slightly yellowish.

78. *Mackerel.*—Body, light-brown camel's hair, bound with black silk; red cock's hackle; wing, a brown hen or partridge's feather.

79. *March Brown.*—Calves' down, or, for a shallow river, the lightest tan of a terrier, for body; a brown feather from a barn-door hen or kestrel-hawk for wing. The dubbing of body may be drawn out a little at the tail.

80. Body, hare's face, ribbed with gold twist; wings, pheasant's wing; legs, dark grizzle cock's hackle. Good on the Exe.

81. Body, light fur from a hare's face, ribbed with yellow silk; wings, mottled feather from the partridge tail; tail, two fibres of the same feather; legs, feather from the breast of a hen pheasant.

82. *Marlow Buzz.*—Body, black and copper-coloured peacock's harl wound together; hackle, dark furnace.

83. *May-fly.*—Body, straw-coloured worsted; tail, three fibres of the feather from the sides of the rump of a cock pheasant; legs, straw-coloured hackle with a brown rib at the butt; the points of the hackle cut off half way up and ribbed from the extremity of the body to imitate the rings round the body of the natural fly. This can be done with brown silk when the hackle cannot be got; wings, olive-coloured mottled feather from the under part of the wing of the Canadian wood-duck or speckled feather of the mallard dyed yellow; or, it may be dressed thus: body should be of light straw-coloured crewel, warped from tail to shoulder with silk a few shades browner; the legs should be of a buff-red hackle (such a one as may be got from a Cochin China fowl); the wings may be of the back feathers of a drake, or, better still, the mottled feathers of a summer duck (and not too much of it) stained a dull yellowish green.

84. *Needle Brown.*—Body, orange silk; hackle, cock pheasant's neck.

85. *Oak-fly.*—Body, orange floss silk, with ash-coloured silk at the tail and shoulder; legs, red, wound from the bottom; wings, woodcock.

86. *Olive Dun.*—Body, bright olive mohair; wings, dark starling; tail, ginger hackle fibre. Good in March. One twist of gold may sometimes be added.

87. *Orange-fly.*—Body, yellow floss silk, beund with orange silk; black hackle; dark feather of a mallard or starling for wing; three hare's whisks for tail. The orange fly is an excellent fly for warm weather, and Mr. Ronald's plan of dressing it is as good as any I know of—body of orange floss silk, tied on with black silk; wings, dark part of starling's wing or feather of hen blackbird: legs, a very dark furnace hackle.

88. *Palmer.*—Snip up with the scissors the hare's-ear and yellow mohair together, three parts of the former to one of the latter, and as small as possible. Select two or three small golden dun hackles from the back of a cock's head, none of them more than an inch long, and of as short fibre as possible. Take two small Limerick hooks, the points of which shall not extend beyond the fibre of the hackle when it is wound on. Tie them on gut, one down, one up, with the bend of the one to the shoulder of the other, and both not exceeding an inch in length. As the working silk is returned from head to tail, tie down the points of the hackles at equal intervals, having the last, of course, at or near the tail of the intended

body. Twist the hare's-ear and yellow dubbing on the working silk, and make the body as far as you fancy the tail hackle will reach. When turned round the body, slip your dubbing up your silk an inch. Then rib it so far, work the hackle over all, and tie all down without knots. Slip your dubbing down the silk again close up to where you left off, and repeat the process with hackles two and three. Three small palmers are, in fact, made, but so as to look like one body tapering from tail to head.

89. *Peacock*—Body, brown peacock's harl, ribbed with mulberry-coloured silk; wings, starling's wing; legs, dark grizzle cock's hackle. Good in Exmoor and Devon.

90. *Peacock's Hackle.*—Body, peacock's harl, red cock's hackle bound with red silk.

91. *Red Ant.*—Body, peacock's harl, with a large tag of the same; wings, light starling; legs, red hackle.

92. *Red Palmer.*—Body, peacock's harl, ribbed with gold or silver; legs, a good red cock's hackle. Good in general.

93. Body, peacock's harl, bound with red silk; red cock's hackle over all.

94. *Royal Charlie.*—Body, orange silk; hackle, brown grey from the partridge's neck.

95. *Sand-fly.*—Body, yellow fur from a hare's neck; wings, landrail; legs, light ginger. Good in Somerset, and Ireland and Scotland.

96. *Silver Horn.*—Body, black ostrich harl; wings, cock blackbird's wing; legs, small black hackle; horns, grey mallard's feather. Summer and Autumn.

97. Body, black ostrich harl ribbed with silver twist; legs, black hackle.

98. *Snipe Blue.*—Body, blue dubbing, bound round with yellow silk; snipe's wing, lightest feather; smoky hackle.

99. *Spider-fly.*—Body, lead-coloured silk; legs, a long fibred black hackle, very thin; wings, woodcock's wing or hen pheasant's. Good Wye fly.

100. *Stone-fly.*—Body, fur of hare's ear mixed with yellow camlet, ribbed with yellow silk, closer at the tail; wings, pheasant's wing or dark mallard's wing; legs, brown-red hackle; tail, mottled partridge fibre. Good in Wales.

101. *Turkey Brown.*—Body, brown floss silk, ribbed with gold; tail, red hackle; legs, dark red hackle; wings, brown partridge. Good in Devon.

102. *Walsh's Olive Dun.*—Body, bright olive mohair; wing, light starling; legs and tail, ginger hackle.

103. Body, bright olive mohair; wings and legs, sooty dun hackle.

104. *Water-fly.*—Body dark brown floss ribbed with purple; legs and tail, red cock's hackle stained brown with copperas; wings, brown partridge tail.

105. *Welshman's Button.*—Body, peacock's harl, tied with black silk; black cock's hackle; dark tail feather of a partridge for wing. From the middle of April till the middle of August, especially in the evening.

106. *Willow-fly.*—Body, green peacock's harl, bound with green silk; wing of a starling or brown feather of a mallard.

107. Body, green floss silk, with peacock's harl; wing, starling's feather, taken from under the wing of a one-year-old bird.

108. *Wrentail.*—Body, ginger-coloured fur ribbed with gold twist; legs, feather from a wren's tail. A good Irish fly, varying the body, red, green, dark brown, claret, and purple.

109. *Yellow Dun.*—Body, yellow mohair mixed with light blue fur from a mouse or rabbit; wings, starling; legs, a light yellow dun hackle.

110. *Yellow Sally.*—Body, light buff-coloured fur; wings, yellow feather from under the thrush's wing, to stand erect; legs and tail, very small yellow dun hackle. Good in Derbyshire.

111. *Martin's Fancy.*—Body, buff dubbing, honey-dun hackle, and light coloured hen pheasant's wing.

112. *The Professor.*—Wings, mottled brown mallard feather; body, yellow floss silk with black hackle wound close under the shoulder; tail, two fibres of wing. Good in the Hebrides and North of Scotland.

113. Wings, the white tip from mallard's wing, or rump feather of turkey; body, black hackle over dark coloured dubbing; tail, silver and orange tuft. Good in the Hebrides and North of Scotland.

114. *White Moth.*—The white moth may be used small or large. The body may be made either of white crewel or of a light coloured ostrich harl; a soft white hackle for the legs, and two slips of any fine white feather for wings, with one turn of peacock harl for the head. Hook from 6 to 9.

115. *Mealy Moth.*—Hook No. 7; body of either crewel or ostrich harl of a pale creamy tint, with two twists of bright orange at the tail; legs, hackle, of the same colour as the body, and wings of any soft feather of similar colour which is speckled—an owl's will do.

116. *Brown Moth.*—Hook 6 or 7, with a light brown body and legs, and a heavy and dark brown wing of two small grouse or woodcock feathers.

117. *Harlequin.*—The lower half of the body is orange, and the upper green floss silk, ribbed with gold tinsel, a black hackle, and dark starling wings.

ARTIFICIAL GRASSHOPPER.

This bait was originally made and arranged for grayling only, and its work was generally considered to end there; but nearly all the fresh-water fish can be taken with it when made of different sizes and shades of colour. The fish do not nibble, but rush at the bait. The artificial grasshopper is a sink and draw-bait, and used near the bottom in the usual haunts of the fish; you require sinking and drawing up and down at the rate of about twenty-five ups and twenty-five downs in a minute, about fifteen inches each draw, or less. Some anglers use a natural grasshopper on the point of the hook, or a bit of worm, but this is quite unimportant, and only to hide the hook; it forms no part of the attraction. When grayling are well up they require nothing more than the artificial bait. One day no fish will look at it, another day every fish seems eager to be first to take it; and although essentially a grayling bait, it should only be used in extreme cases. All that can be said in its favour is, that the angler will take a much greater proportion of large fish, and such as seldom rise at the fly. For grayling, August or September would be soon enough to commence, and its killing attractiveness continues through the following months of the year, and even January and February. The water should be low and fine, if with a little wind to cause a ruffle the better. Use it on the fords of twelve inches to the pools of as many feet deep, where the heaviest fish are to be found.

CRABS.

It is necessary when using their interiors to wind them on the hook a piece of thread, and to strike at the first nibble.

CREEPER.

This is the larva of the stone-fly, found in April running about the stones by the river's brink. They will not keep long, but may be kept for a few days if occasional access to water can be afforded to them.

COCKROACH.

A capital bait for trout.

COW'S HEEL.

This boiled until soft is a capital bait for chub, ground-baiting with the same scraped fine.

DEAD BAITS, TO PRESERVE.

Immerse them in methylated spirits of wine, or any spirit. Baits may be preserved a long time by this means.

Again, get a few pennyworths of acetic acid, add water to the proportion of two-thirds, this will keep baits during the winter months.

Another method which will answer for minnows is to pack them carefully in salt and fasten them down tightly, a sardine box is as good as anything for the purpose.

A correspondent thus describes the process he follows "I used first to catch my minnows, then get them home as quickly as possible, spread them on a dry cloth; after wiping each carefully, place them a few feet from the fire for ten minutes or so, with another cloth over them, on which I gently pressed with my hand to cause the cloths to absorb the moisture; while this was doing I had salt drying on two dishes before the fire or in the oven. On the first dish was a thin layer of salt, on which, when dry, I laid my dried minnows; then took salt from the other dish and sprinkled it lightly over them—in an hour or two the salting was complete. I then took each minnow, knocked the superabundant salt off it, and placed the whole on a dried and warm dish, which I put on a shelf (as near the kitchen ceiling as I could get it) for a couple of days. Minnows prepared as I have attempted to describe require to be packed neatly away in a box, and shaken as little as possible, as, being dry and brittle, the tail and fins are apt to get damaged; while, on the other hand, if carefully managed and not too highly salted, they will become, after being in water awhile, as bright and as fresh-looking, with the exception ofthe eye, as newly caught fishes. Trout are exceedingly fond of them, and will come again and again, even after being slightly pricked.

Again, for dace, roach, &c., salt down the fish, slightly slitting the intestines, so that the salt may permeate well. Place the fish to dry before the fire, and when dry varnish them. They will last a long time without losing colour.

DEW OR LOB WORMS.

They come out of the ground at night after a heavy dew or rain, and may be caught easily by the aid of a lantern. Moistening the ground with water of an evening is also a good plan.

Lobworms should be put into fresh damp moss to scour, and carefully sorted over, the dead being picked out daily. They are capital bait for salmon trout, barbel, bream, perch, and other fish.

DOCK WORM

Is a curious insect inclosed in a small reddish or yellowish husk, is like a gentle with a red head. It is found among the roots of flags in old ponds.

FLY MINNOW.

The fly minnow should, of course, be used with a swivel, and the tail should be twisted sideways, or it will not spin. The gut should be fine, and thoroughly soaked, and the swivel should run very freely: indeed, if the casting line be fastened to the running line with another swivel it will spin all the better. We have always used a couple of shot eighteen inches above the minnow, in order to sink it beneath the surface.

FROG.

The large yellow frog is often used for pike when small fish cannot be obtained. Small frogs are capital bait for chub and trout.

GENTLES, PRESERVING FOR WINTER ANGLING.

A cast-iron pan to hold six gallons (an earthen pot would answer the same purpose), and a two-gallon bottle with the bottom sawn off; these, placed in a cold out-of-the-way building, are all that is necessary, except the breeding stuff. Fill the large receptacle, to within two inches of the top, with damp river sand or garden soil, and place the bottle (neck downwards) on the top of the soil in the larger vessel. From the middle of October to the latter end of November place offal in all the sheltered and sunny spots where the blow-fly resorts. When the offal is sufficiently blown, place it inside the bottle, and as it sinks down the bottle replace it by fresh offal. Never let the gentles starve; they will, however, find their way down into the soil beneath, and can be there taken up when wanted.

GOOSE FAT.

It is said that a bare hook dipped into goose fat will kill roach and dace.

GRAVES.

This, broken up and slightly scalded, makes capital bait for chub, barbel and some other fish. Choose the whitest bits for the hook.

GROUND BAIT.

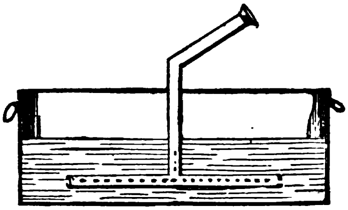
Mud Bait.—Greville Fennell advises the angler to fill a keg with liquid mud, the best being that red portion from the tideway filled with the blood worm. Attach to the keg a gutta percha tube, having a stop cock fitted close to the barrel. Sink the loose end to the bottom of the water, and when fishing every now and then turn on the mud; the effect is said to be good.

LAMPREY.

A good bait for wiffling for pollock, bass, or mackerel.

LIVE BAITS, TO CARRY A DISTANCE.

In a bait-can insert a T-shaped tube of metal perforated along the shorter arm in a series of holes. The longer arm projects through the lid of the can, and by occasionally blowing through the tube, the fish can be carried a long distance.



Again; insert in a bottle a well-fitting cork, having a brass tube driven through the middle. The tube must not touch the water by about half an inch. By this means air can be admitted to the bottle, and the fish kept alive, and no water will be spilt.

To Keep Alive in Well Water.—Let the water from the pump or well stand some time in the open air, and put in some earth and a stone. The fish will live some time in this.

MEAL WORMS.

Are found in stale meal or in bakehouses. They are very killing for trout.

MINNOWS, TO PRESERVE FOR A DAY'S FISHING.

Put a dozen or twenty live minnows in a common big-nosed oval bottle, then cork them up, and in a little while they will die of asphyxia and shortly after become of a beautiful whiteness, which colour they will retain for a long time. Care must be taken not to shake the water in the bottle over much.

Take as much moss as will cover the number of minnows required, and well saturate with water; squeeze it as dry as you can with one hand, and place your minnows in layers of the damped moss, in a tin can with a hinge. In moderately cool weather, minnows so carried will keep alive for nearly the whole day.

Minnows may be kept alive throughout the day by being put in a common soda-water bottle, half filled or more with water. The cork must have a few nicks cut in it at the side to admit the air. The water should be changed every one or two hours, according to the heat of day, and they never will die "as long as they are kept in motion;" and should the angler stop, he must take care to move the bottle occasionally. The bottle must never be immersed in the water, or they will die immediately. Minnows, if kept in a tank, must have constant fresh water, and sand must be always put in.

MUSSELS.

These, used raw, are good baits for barbel. They can be kept on the hook by means of a smaller hook, placed above the principal hook. They can easily be obtained when the water is low, or by two persons, one on either bank drawing a line with the stream.

OX-PITH AND BRAINS.

The best method of preparing pith and brains for chub fishing is to take a set of bullock's brains and pith, and put them in salt and water for several hours, then take the brains in your hand and pick off all the fine membrane and coagulated blood, then wash them in several waters to take out the salt, and tie them in a cloth. The pith must be well washed to free it from salt, and then cut up into bits of half an inch long each, and put into a cloth and boiled with the brains for twenty minutes. The small ring of membrane will prevent the pith from washing off the hook. They will be about the proper size; but if too large, cut them with a pair of scissors after placing them on the hook. The brain is used for bait to throw in the water. Take a piece about the size of a walnut and chew it a little, and throw it in; it will be distributed by the motion of the water, and if there is a chub in the vicinity it will be sure to find it. Then drop in your baited hook.

Another plan is to first scald the brains, just to set them, and then place them in cold water, which enables them to be cut up easily with a pair of scissors; when cut into small pieces, and placed in a half pint pot, they can be thrown out of the mug much farther than blown out of the mouth. The pith for the hook should be just scalded, and not skinned. Cut a piece the required size, and either pass the hook down the pipe or through the middle.

PASTES, TO MAKE.

Honeycomb Paste.—Honeycomb mixed with flour and kneaded into a paste is very good for roach in November. The wax renders the paste very stiff.

Red Paste.—Take the crumb of a *new* loaf, well knead in the hand till it becomes tough, use as little water as possible; if the river is discoloured mix vermilion until it becomes of a bright red, something the colour of salmon roe.

Or use anatto, which affords a very bright vermilion hue. The cochineal and lac insects yield, before they are exposed to the operation of acids, a rich crimson colour.

Streaky Paste should be made of the finest flour and sugar and water, Colour half of it with red lead, and when using mix them together so that the paste may have a streaky appearance.

White Paste.—Soak a piece of very stale bread for ten minutes, press the water thoroughly out, and knead with an equal quantity of new bread, either dry or dipped quickly into water and squeezed; the result is a soft, tough, and perfectly white paste.

Again, the dough for bread previous to baking makes a good paste.

An excellent paste may be made by dipping crumbs of bread in water. and kneading it in a towel till it becomes a thick paste. A little honey may be mixed with it.

PARR-TAIL.

This is part of a small trout or parr cut off, and the hook fixed in it, the tail (the finny part to be cut off) being nearest the rod. The shape of the bait, if properly cut and put on, causing it to spin. In bright swift water, against stream, it is often more killing than the common minnow.

PERIWINKLES.

Sometimes good for trout, roach, chub, and barbel. Fish with one large shot resting on the bottom.

RAGWORM (OTHERWISE CALLED THE ROCK OR MUDWORM).

This is found by digging under stones in the estuaries of rivers, &c. It is a good bait for all kinds of sea fish.

REDWORM.

This is found in rotten leaf-mould or decayed vegetable matter. A piece of old netting or rag scours them well. They are used chiefly for roach, dace, gudgeon, tench, and carp.

SAND EELS.

This excellent bait for open sea and estuary fishing is often difficult to catch. The great heat of summer, it is believed, renders the sand eels disinclined to bury themselves in the banks, but they are daily met with in large shoals in the eddies. When this is the case there are two good ways of taking them, the first, however, much preferable to the second. These are the dip net and snatching. The dip net is circular, and laced to an iron ring about 8ft. diameter. It should hang about 3ft. deep, and the bar iron for the ring should not be less than ¾in. thick and galvanised, for if less substantial it will not keep its form, and if ungalvanised the lacing and net get iron-moulded and rotten. The evil may be partly prevented by well tarring the ring with coal-tar, serving it with old canvas and rope yarn, and afterwards saturating the whole with coal-tar and turpentine, including the net itself. This net is slung at four points of attachment, on the ring by two pieces of stout cord passing over a 6in. block exactly over the centre. It is suspended from an 18ft. spar by a 2in. rope, made fast to the end, passing through the block over the net, and then through another 6in. block, also made fast on the spar 3ft. from the outer end. The heel of the spar being securely lashed, the net can be quickly raised when fish are seen to pass over it. It is requisite to use this net on the beginning of the flowing tide, whilst a considerable portion of the estuary water remains in the harbour, which is then not so clear as later on the tide, when the fish avoid the net. A net of this description may be used with advantage when a canal communicates with a tidal river, and will take whitebait and smelts, also grey mullet when the water is somewhat coloured, and they are abundant. For taking sand eels, the bottom would be better of unbleached calico than netting, to the width of 3ft., as this would retain the water, and prevent the meshing of the sand eels. A bag on a stout landing net ring, driven into a light fir handle about 9ft. long, is requisite to take the fish out of the net when raised within reach. It is of course necessary to have the sand eel basket ready with a bowl to pour the fish into at once, to preserve them alive, with a sufficient length of cord to lower the basket into the water. To render the net more portable, it may be made to fold in half, like a closed book. The following simple form is strongest and best: the two semi-circles should project beyond each other 8in. An eye being made on the ends, they can be pinned together by a perpendicular joint, whilst the overlapping ends are secured by a sliding ring. Horizontal joints used in some nets are not so good and strong, the material being cut into rather too deeply, if the ring is jointed like a pocket landing net. Three or four triplets of the trout size at 6in. intervals, on fine gimp or double gut, are useful for jigging with ½oz. of lead below; but it is a cruel way, and the dip net, or seine, or scraping, is therefore preferable when it is practicable to use these nets or the scrapers.

SHRIMPS.

The tail of a boiled shrimp is most excellent bait for large roach and dace. Trout take it admirably, also perch,

SLUG.

Good bait for trout. Choose the whitest.

SILKWEED.

This weed is found in all running streams like long pieces of silk, and is very killing at times for roach. Wrap a small portion round a very short-shanked hook, leaving a little tail hanging down. Mr. W. B. Lord states that it is also very killing in grey mullet fishing.

STONELOACH.

In the Irish lakes it is by far the most killing bait, and is taken greedily by pike and perch, and frequently by trout. It should be used on a spinning gorge to suit size of stoneloach, and the finer the mounting the better.

WASP GRUBS.

Pick the grubs out of the comb and put them into a colander inside a large basin; then pour a large saucepan of boiling water over them and stir with a spoon till, by the touch, they feel firm, then instantly drain and throw them into a little bran and shake them till quite dry (for on this success depends). They will be found very firm. If they are placed on a plate or slab, and kept very cool and coated with honey, they will keep well for weeks.

WATER WORM.

This worm lives in the long slimy moss growing on weirs, and over which the water does not constantly run. This worm does not need scouring, and is a good bait.

WHEAT.

A capital bait for roach and bream. It should be boiled till soft and bursting. Pearl barley, boiled, is a favourite bait for roach.

WORMS, TO TOUGHEN.

Take the worms and put them into bran for about six or eight hours (longer will be apt to kill them); then take them out and put them into damp moss, and use them. They are then very tough, and will, according to the fishing, last a long time.

WORMS, TO KEEP ALIVE.

Get a large box full of rough clay, and covered with damp moss, and put the worms into it, and they will keep any length of time, of course a change of earth is necessary occasionally.

FISH.

BARBEL.

Their home during the heat of the day is a good deal under the camp sheating and old timber floorings of weirs. They are, when hungry, generally seen grubbing on the bottom, turning over and searching between the stones for the cad bait, or any other food which may lodge or hide there. Cad baits are a great favourite with the barbel. Fish, of course, on the bottom, keeping the float behind the bait. Worms, especially lob or dew worms, well scoured, are likewise a tempting lure, with a handful, fresh dug, thrown in now and then, so as to catch the set of the current, and fall in the line of your swim. You may also try a mass of good white greaves of walnut size, or a piece of cheese of the same size. They do not usually take a fly, but the large one will often run at a spinning-minnow early in the season. They bite well after rain, when the water is thickening a little. If you are angling at weirs, you must take care that the barbel, upon being hooked, does not make head towards you, and so for the piles and woodwork.

BASS (*see* MULLET).

Sea fly-fishing for bass begins in June, and ends late in October. Use the largest gaudy salmon flies; sound, strong, twisted, knotless, casts, with one yard of the strongest single gut; eighty or one hundred yards of silk reel line; an 18-feet salmon rod; a sharp gaff; two flies are enough. Work your flies in a very jerking manner, as in salmon fishing *à la prawn.* The best depth of water is two to four or five feet; the best casts are all the inlets or rocks, sandy bays; particularly thrown into the frill of bursting waves, as the bass come nearly ashore, seeking the indescribables turned up out of the sand; watch the wave, and into him, before the hubble bubble begins; so, when you have hooked your fish, be sure to keep an upright hand bearing heavily on him, for his upper jaw no hook will enter—hence, if you give only a moment of slack line, the hook will come out; any other portion of the bass is certain, and the hold-fast is sure, and strong beyond any other fish. The best place to fish is the mouth of a tidal river. The best fly is a large palmer on the largest sized salmon hook; body, yellowish green mohair, or red ribbed with broad gold twist and the hackle red. High water is the best time.

Mr. Hearder, of Plymouth, recommends the following fly, he says: "Take a good-sized Limerick hook, varying from No. 2 to 6, according to the size of the fish likely to be met with; and having attached to it a length of the strongest salmon gut—which, for extra strength, I generally put on double, by bending the gut into a loop and whipping both ends on to the hook—I next complete my bait by taking two white feathers from the breast or body of a white gull or goose, about 1½in., or from that to 2in. in length, and fasten these one on each side of the hook, with their inner faces towards each other, so that they lie quite flat, embracing the hook between them, which they nearly cover. A slip of the rind of pork, or of a white kid glove, cut in the form of a fish, is more efficacious than the fly. It occured to me some five or six years since that a long slanting slice from a small india-rubber tube would commend itself to the taste of the bass in preference to anything else. I tried it, and succeeded beyond all expectation. A slice of this tube firmly secured to a good-sized hook beats every artificial bait, not only for bass, but for large pollack.

BREAM.

Bream do not bite well at all times, particularly during the summer months. In October, and early in November, if the weather be open, is the best time for them. After a flood, when the water is subsiding, bait the hole, eighteen hours before fishing, with some hundreds of well-scoured dew-worms chopped into small pieces. Fish fine with a swan quill float, and as far off as possible; be as quiet as you can, and bait with the tail of a well-scoured dew-worm on a No. 7 hook. Two hooks are often used, one on the bottom, and one 2in. off it.

Pond bream, capture of.—Get two or three quarts of lob worms, chop them up small, and throw one-third into a bream hole about dusk. Repeat on the ensuing evening, and commence fishing the third morning, within an inch of the bottom. The hooks, No. 6 or 7, should be baited with well scoured red worms, or the tail of a lob; cast in a handful of the remaining worms, and when sport slackens repeat.

BURBOT.

These fish are very local, their haunts in the same river being often two and three miles apart. They are found in deep mill dams, and below weirs or in deep still reaches having a muddy bottom. They may be taken towards night, during thunder, or in sultry cloudy weather. Lob worms are good, but a dead minnow is better, baited as if spinning for trout. Drop the minnow to the bottom and drag slowly down stream; do not strike too soon.

CARP.

These fish are very uncertain. After a shower, on a warm damp evening, is the best time for fishing. A boiled green pea is a capital bait; also ground-bait with boiled potatoes, and bait with half-boiled pieces. You should ground bait over night. Anything will do for ground-bait, chickens' guts, blood, cow-dung, mixed grains, and greaves, mixed with clay. As baits, use paste of all kinds, especially sweet paste, gentles, and red worms.

A very good way of killing carp is to let the bait sink between the leaves of the water-plants, and gently draw it up and down till you feel a slight nibble, when the line must be loosed until the fish runs away with it. A paste made of common flour and anchovy sauce, with a little water mixed with it to prevent sticking, has been found good.

Carp may also be thus taken. Take an old boat, and fill it with brushwood or other loose stuff, taking care to keep it down with large stones. Tie two ropes to the ends of the boat, so as to be able to draw it up again when wanted, and then sink it, leaving it there for a month or two, so that the carp may have time to get accustomed to it, when they will take up their abode in the boat. After you have left it in a sufficient time, draw it out again by the ropes tied to it for the purpose, and you will find the fish in their hiding-places in the brushwood. It is best to put some food in the boat before you lower it.

CHARR.

The charr is in season from the middle of April to the beginning of September. The best time to fish is from April to the end of May, and then again through August, but little can be done during June and July. Early morning is the best time for fishing, especially if there be a breeze from the south or west with a few drops of rain. The charr loves best water from 30yds. to 70yds. deep. The tackle used in Windermere is made thus: First, a stout rod of some 7ft. is placed mast-wise in or near the centre of the boat; from the top of this two long strings (about 50yds.) descend, one on each side of the boat, to the water. These lines are kept tightly stretched, and at right angles to the course of the boat, by means of "otters." From these strings are suspended lines (some 50yds. long) at intervals of 10yds., generally three on each side of the boat, the lines nearest the boat being some 20yds. from it, to leave room for two rods, furnished with similar lines, to be placed so that one overhangs each side of the boat; in all eight lines. Each of these lines is furnished with from 4yds. to 6yds. of gut, with swivels and minnows. The Windermere tackle is composed of a flight of very small fly-hooks, tied with a triangle at the tail, two "pairs," and a "single" or lip-hook. It is usual to mark a place where several runs are had, by taking its bearings, and to return over the same ground, as the fish swim in shoals. The "take" lasts till 7 a.m. or half-past, in general, but little good is ever done after the sunbeams strike the water. In the middle of the day they are rarely caught, but towards evening they take a little. This method is pursued for a few weeks, and as the quantity caught falls off, flies are substituted for minnow-tackle to the number of twelve or fifteen on each line, till at last this too becomes useless, and none are caught for eight or ten weeks. At last, however, the colder weather comes again, and during part of September the fly and minnow are again taken, but not to the same extent as in spring. Their favourite fly seems to be the green drake. Flies made from the feathers of the wood owl, moorhen, pheasant, landrail, &c., are also very successful.

CHUB.

A longish rod with upright rings, and a soft line without many knots in it, is required for chub fishing; on to a No. 6 or 7 hook, hook a young frog, taking merely a slight hold of the back skin; about a foot above the frog have a pistol-bullet, or one a trifle larger; wind up your line until the pistol-bullet hangs at the eye of the top joint of the rod; you have then but a foot of the line with the frog on, hanging loose, and this, having selected your place, you can easily push through boughs and bushes until the point be over the required spot; or, should it be unusually thick, you may turn the line two or three times round the top till the frog lays close to the rod. By turning the rod the reverse way of course this will unwind when required. Being now over the spot where chub are supposed to be, yourself hidden by the tree or the foliage, give out line, which, with a slight shake of the rod, the weight of the bullet will begin to draw out; allow it to draw it out gradually until the frog just touches the top of the water, but don't let the bullet or more than an inch or so of line touch the water—indeed, it were better if none at all touched it.

A boiled shrimp is a good bait, used in the ordinary manner.

Some use in winter the "pith," or spinal marrow of an ox, as bait, at the same time using the brains of the same as ground bait. The "pith," when taken from the bone, possesses two skins; remove the first by cutting the column open with a pair of scissors, and then "skinning" it off with the finger and thumb, then boil the "pith" a few minutes until the inner skin becomes brown, when it is tough enough for use. The brains for the ground bait should be first boiled, and then chewed into minute portions and spat into the river while fishing.

CODLING.

With a gaudy, moderate-sized Irish salmon-fly these may be taken in large quantities in the sea lochs of Scotland.

A live shrimp is a first-rate bait; also the soft part of the crab; so is the whelk, the cockle, and the mussel.

CONGER.

A conger line is of three parts when ready to be used—the main; the snood, a piece of whipcord rolled or "laid up" into a three-stranded loose cord, about a yard long, to which the hook is fastened; and a sinker, of lead, lighter or heavier according to strength of tide. The lead being fastened on one end, tie the snood securely, but not fast, to the main line above it, so that the lead will keep the snood from coming adrift. This gives the fish less hold over the main line to unlay it by twisting when you haul him up. A gaff, well steeled at the barb, and hardened like a file, in a stout oak handle, with a lanyard attached, and a strong knife, complete the equipment

Squid (*i.e.* cuttle-fish) is a deadly bait, but it is at times scarce; and it is also a great temptation to dog-fish.

Never let any fish go you can help, nor throw any offal overboard while fishing. Herring is the bait—a good fresh herring. Stale bait needs a very hungry conger indeed.

Spring-tides, when the tides are still gaining, up to the first day or two after the highest tide, is the best time for all fishing.

Having arrived at the spot cast anchor, and then taking a herring, cut off his head and tail, putting the latter up the hook and the former over the barb, and then pay out till the lead touches the ground. After September you may fish on the ground, if clear of large beds of rock; before then keep up a little, or the crabs will eat the bait.

CRAYFISH.

Transportation of.—There are few crustaceans which require a more constant flow of fresh aërated water than these do; but, on the other hand, if the branchiæ be kept moist, they will respire the air of the atmosphere for a considerable time, and will live longer by being frequently watered by means of the rose of a watering-pot, or by water being dashed upon them, than if they were kept in a small quantity of water which was not subjected to some process of aëration. Packed thinly in damp moss they would travel and keep alive for twenty-four hours.

DOG-FISH.

The skin of the dog-fish, when dried, is admirable for polishing, and the flesh is good for bait, as other dog-fish will scarcely take it, and its use saves the destruction of more valuable fish.

EELS.

There are two kinds of eels very much alike in appearance, and yet very rent in their habits. One kind is migratory, coming up from the estuary or sea in the spring of the year. They will find their way, if possible, down again in the fall of the year towards the sea, and if obstructed will sometimes even crawl out of the pond at night and try to find the river or brook again below the obstruction, The other kind of eel stays in rivers, ponds, brooks, &c., of their own accord, and do not migrate. They have broad and round mouths, delight in mud, stonework, &c., and hibernate in winter and will not take a bait unless it is put close to their mouths. It is difficult to induce them into a trap; but they can be caught on lines with almost any bait, small fish being the best, worms next. A good bait for the trap is to collect a quantity of egg shells, and smear them inside with the contents of a couple of fresh eggs, and then bait the trap.

The best bait for the hook much depends on the locality it is intended to fish. In a fresh-water lake the largest and reddest earthworms procurable are the best general bait, but minnows are also often used with much success. The worms should be well scoured in moss, on which a little milk or cream may be dropped every other day to fatten them. Moderately sized white minnows should be preferred when these fish are used, and it is best to put them on with a baiting needle down the throat; the hook will then rest at the side of the jaw, and the bait will be taken head downwards, which will enable the fish to swallow it readily. Small gudgeons are also good baits on a night line, as well as minnows. In an estuary, or in a river whose rise and fall are owing to the tide, there is no bait which can vie with the soft crab, of which also flounders and bass are very fond. This crab (*Carcinus mœnas*) is found under stones and weed when about to cast its shell, at which time, after cracking it, the shell may be peeled off like that of an egg hard boiled. A fair-sized peeled crab will make about four baits, including the toes, which will peel to the very points. Some, extra large, may make five baits. In the river Exe they are obtained at Lympstone by putting down old kettles, frying-pans, earthenware pans, saucepans, &c., between half-tide and low-water mark, under which the crabs shelter themselves, and are found when wanted. Salter recommends pieces of lamperns as good bait in tidal rivers, and also a piece of sand-eel an inch long, with the backbone taken out. In tidal ponds they are perfectly ravenous after a living sand-eel, and baiting with small fresh-water eels we have taken others of fair size. A boiled prawn or shrimp, taken out of the shell, is a good bait for eels in both salt and fresh water. In salt water the eel will also feed on lugs and rock or mud worms. For snoods for night lines a friend recommends thirty horse-hairs lightly twisted; the Shrewsbury thread No. 25, with eight or ten thicknesses, is also very good, as the teeth of the eels slip between. The ordinary eel hook is bad for a worm bait: we prefer a small sized round-bent sea-fish hook, as it will not burst the bait in putting on. There are four kinds of traps for eels. The first will catch any kind of fish in floods, and is called a well trap. For this trap a weir is required with a grating across it; at one side of the weir is an opening about 10in. by 24in., which leads into a cellar or vault 4ft. square, in the side (near the bottom) of which is placed a large grating (close in the bar so as to prevent an eel passing through it). The bottom of the vault is about five inches below the usual level of the water under the weir in order to keep the fish alive. You enter the vault by a strong door, secured by a good door-lock. On the weir should be a second grating, 4in. between each bar, slanting up-water, to catch any logs or other matters coming down the water. The fall between the upper and lower water may be from four to eight feet as circumstances are, but if you get 4ft. fall into your vault and let the water escape through a side grating, taking care to keep four or five inches of water in the bottom of your vault, it will do. A frame net to fit the bottom of the vault, with a pulley and cord, would bring up everything in the trap. The second plan is to have a frame three or four feet square, to fit into an opening in a weir or flood-gate. It should slide into grooves on the lower side, with a net 7ft. long, tapered like the purse of a drag-net. This is used at flood times, and must be of strong cord, formed of green hemp, and thicker than what is called "bag-string." The eels are carried down by the flood; on striking the net the pressure of the water holds them fast and kills them. The third plan is an osier basket trap, which catches all fish running up stream; this is, as regards eels, not so effective as the two former. The fourth plan is baskets sunk, with hay and sheep's garbage in them, in which the eels lie and are captured by the basket being drawn up quickly by a cord attached to it. As a bait for eel pots we have seen fishermen in the upper portion of the Thames break a roach or dace in two, and, fastening it on a skewer, put it into the pot.

The most attractive bait for eel traps is, however, the fresh-water mussel, the shell of which should be broken before putting it in the trap. Some place a few live bait in the eel-trap, and point the mouth down stream, between two beds of weeds if possible. Eel nets may be had from all net makers. They consist of a purse about six yards wide by two feet deep at the entrance, gradually tapering away to the funnel, which is about three yards long. The funnel is kept open by wooden hoops, and has two *thiefs* in it; they are set with the entrance up stream, and are fixed by two stakes. They may be set any night, but preferably when there is a flush of water. Eels may be caught almost all the year round, but autumn is the best time.

The following has been used as a makeshift contrivance with some success: Take a barrel, cut a large square hole where the bung is, and a round hole about five inches in diameter where the tap is generally placed; fasten the leg of a stocking to the round hole by nailing it all round, and put the leg inside the barrel; put into the barrel any kind of stinking animal offal, such as sheep's guts and blood, and a large stone also, to keep the barrel from moving. If the barrel be placed with the stocking end up the stream, the eels will go in at the leg and can be taken out at the square hole at the top.

Get a bunch of wheat straw, cut out the centre (which you must keep open by means of a couple of hoops), tie the ends tight, to which you must have a rope attached for drawing it out; fill the centre with the entrails of a sheep or hare. Sink it in a deep part of a pool at night and draw it out in the morning.

Some bait as follows: thread a large lob on to a piece of wire, and at each end of the wire place a small cork; one or two in a pot will do! As soon as the hot weather is over, bait with fish, *clean* and *fresh* broken or cut in two. The windpipe of any animal is an exceedingly good and lasting bait for eels; it is as attractive as egg shells to the eye, and as worms to the smell. If your eel trap is placed with the mouth or entrance down stream, tie one end of the windpipe to the bung in a running stream; that will soon draw the attention of eels by its constantly moving.

A contributor to the *Field* says that for rod and line fishing, a minnow hooked through the upper lip is a very good bait for eels. Loaches used in the same way answer very well; but of the two, give the preference to the minnow.

Parboiled entrails of fowls may also be used. Eels in perfectly fresh water will feed on the entrails of mackerels, herrings, or pilchards greedily, also boiled shrimps. For a night line make the snoods as many thicknesses of thread as will pass through the eye on the top of the eel hook. This baffles the eels more than a single hard hook link.

The only way to prevent eels from twisting off the hooks of a night line is to fasten every hook and its attendant link on to the main line by a swivel. There is a rough coarse kind of brass swivel which is made for salt water, which is cheap and will last a long time, and which will save its expense in the number of eels it save. The only other remedy is *very early rising.*

Unbleached string, which can be procured at Nottingham, makes a capital night line for eels, as it cannot be broken by twisting.

FLAT-FISH.

The rag-worm and log-worm are first-rate baits for this fish in rivers and estuaries.

GRAYLING.

Grayling spawn in the end of March, April, and beginning of May. They delight in streams having a gravelly bottom, with a frequent mixture of streams and still waters. After spawning, this fish soon comes into condition. In September and October he is in his prime. The grayling, however, is not a desirable addition to a good trout stream, since if allowed to increase too much he will in time kill out the trout. This fish grows to some three or four pounds in weight.

GURNETS.

The rag-worm and log-worm are also first-rate as baits for this fish in rivers and estuaries.

MACKEREL.

The best speed for the boat to go through the water in whipping for mackerel is about three miles an hour. Never leave the school, having once struck it, but tack across and across it, thus insuring sport. If the fish do not bite briskly, jerk the line at the interval of a second. Almost anything will take a mackerel—an inch and a half of tobacco-pipe, white, or any small salmon-flies, a piece of squid, or a sixpence with a hole in it. Hearder's minnow is one of the best baits. Use only one hook per line if using four lines. A dead sand-eel is often used in spring, the hook being brought out at the vent, and a half-hitch taken over the nose to prevent slipping; a swivel should be used with this bait.

A good bait is a slice from the tail of the fish; and, to cut it, take a mackerel by the tail, and, turning it on its right side, with the head between your knees, enter the knife on its left side, 2½ inches above the tail, and cut down nearly to where the tail-fin joins the tail; then withdraw the knife, and, passing it lightly across, take up the bait, and lay it on a piece of cork, with the bright side downwards; now pass the hook through the smaller end, and all is complete. The first layer of flesh under the skin is red, the next white; and the knife should not cut below the red flesh, or the bait will be too thick to flip or play in the water, upon which much of its attractiveness depends. The fish admits of the bait being cut thinner from the left than from the right side, which is therefore preferred. Never fish with less than two lines, and when you have hooked a fish do not haul him in until there is one on the other line, for they will follow their leader. For ½lb. leads, 12-fathom lines; 1lb., 9 fathoms; and 3lb., 6 fathoms. Choose a good substantial sailing boat (not a dipping lug). not less than fifteen feet or more than thirty-five feet long, and a good fresh breeze on a cloudy day.

From the middle of August to the end of October mackerel may be taken at anchor with the same hair lines as used for pollock. The best bait is undoubtedly the purple sand-eel. To bait the hook enter the point into the mouth of the sand-eel, and, bringing it out at the gills, hook the bait slightly across through the throat, which will injure it but little; and if the tide is running strong, and the bait is more than six inches in length, cut it in two across the middle, which, so far from injuring it as a bait, appears to render it more attractive (probably from the exudation of the oil); but if there is little or no tide, hook the bait through the throat, without first passing it down by way of the mouth, and omit cutting it in two.

If no sand-eels are procurable, use the gut of pilchards, which is an excellent bait; the rag-worm may also be used, or the mussel, or any small bright-shining fish, such as those known as "brit."

If two men are in the boat, five lines may be used, viz., one at the stern without lead, two on either quarter with half-ounce leads, and two amidships with leads of an ounce in weight, and the lines not less than twenty fathoms in length.

In a very heavy run of tide, some use a 2lb. mackerel line; but they rarely fish as well as the hair lines, which, in anything like a moderate current, are the most killing.

Mackerel may also be taken with flies, as well as pollock and bass, either by attaching them to whiffing lines, with or without lead, or by rowing to windward of the shoal of fish, and casting them with a rod as for trout. It is best to sound the bottom with a whiting line, and sandy or oozy ground should be preferred.

MULLET.

The best way to capture mullet is with a net, undeniably, as, although they will sometimes take either fly or bait, they do not take them well; and, as the mouth of the mullet is extremely soft, you are very apt to lose them after they are hooked.

The net for grey mullet should be of thread, or what is called smelt net twine. The length of net must depend on the waters where it is intended to be used. The general length is seventy or eighty yards; two, however can be easily spliced together, if necessary. The length of each mesh should be about three and a half inches when pulled straight. The net should be hung in the lines in such a manner as that five meshes take up the length of three. This necessitates the netting itself to be 117 yards long for a net 70 yards in length. The lines should be soft, the cork line being single, but the lead line double and smaller than the cork. The lead lines should be made one of right-hand twist and the other of left-hand twist. All the corks of a mullet net should be visible above water. The ends of the net should be drawn up to half the depth of the whole net, which depth must be regulated according to the depth of water, varying from three or four feet to twelve feet. Silence is a necessary virtue in mullet-fishing; a skilled rower adds materially to the success. Two hours before and two hours after low water is the best time to fish.

In shooting a net across a creek, throw the first grapnel well on the bank, and let all the leads sink to the bottom as the net runs out. Hold up the cork line feeling the bag net carefully as the boat proceeds. Be careful to give the fish no chance of escape; they will take their opportunity if you do. After setting the net remember to drive all the weeds as much as possible to turn out the fish. In fishing along the bank of a river, drop one grapnel well up in the weeds, and carry the other a little way off the bank, so that the tide may belly the net. On hauling the net keep the cork and lead line close together, and beware of letting them slack. A buoy painted should be attached to each grapnel to show the ends of the net. There is another method of taking these fish by what is called drifting, which is like herring fishing. No grapnel or anchor is required, but one buoy should be attached to the first end of the net, when all should be shot out from the boat and allowed to drift with the tide for an hour. A small rope 20 yards long may be attached to the last end of the net, which will enable the boat to keep farther away. The net is hauled in the usual way.

The early morning tides are perhaps better than the evening ones, especially in hot weather. The boat used for mullet fishing should be flat bottomed; a well is a great improvement to it. Mullet are very fond of those spots frequented by cows to cool themselves in the water. In shooting the net round a shoal on the beach, a great extent of net is necessary, great caution must be exercised and the utmost silence observed until the net is fairly set, then by turning the boat inside the net, and disturbing the water as suddenly as possible, numbers may be taken.

Another plan of netting mullet is to set the nets near a weed edge at low water, and leave them for an hour or more before hauling. Large takes may sometimes be thus made.

They may occasionally be taken in a ground-sein, but although there may be a large school of them, the drag will often result in a blank, for sometimes they will bury their noses in the sand, and allow the foot-rope to pass over them; sometimes they will jump clean over the head-rope, or if there be only one broken mesh in the net they will go through it—and where one goes the others will all follow. The best way is to roll a net up at low tide, and lay it quite across the river, keeping the corks down to the bottom with stones. When the tide is in and the mullets have run up, by taking hold of either end of the net and shaking it, the stones will fall off and the net rise to the top. Then walk into the water and prop the corks up with sticks, some two feet above the surface of the water, and when the tide goes down you will catch every mullet in the shoal.

Mullets frequently escape by jumping over the net, and when one goes over, like a flock of sheep the whole school follows. To checkmate this move, from the ordinary trammel or gill-net is attached from the cork line a trammel of about six or eight feet broad, which is kept floating by means of bamboo canes of from six to nine feet long. The canes are about eighteen inches apart. The mullets, on striking the net upright in the water, jump over the cork line, and are caught by the net suspended by the canes.

Where shoals of small mullets, say of about a pound weight, congregate about piers, quays, and docks in deep water, it is comparatively easy to catch them by angling. The rod should be a good twelve foot or fourteen foot bamboo or hickory, or an old salmon rod with a short top, the reel line moderately fine but strong, with a 6ft. gut bottom, and about four hooks looped on paternoster fashion, but without bone or lead travellers. A ¼oz. pipe lead should be placed on the gut about 1ft. above the lowest hook. This tackle answers well in from 8ft. to 20ft. water. The hooks are baited with pieces of rag or mudworm, and the line kept in gentle motion by raising and lowering the point of the rod a few inches, striking at the slightest touch, when the fish must be instantly lifted out of the water. The angler must, however, be prepared for a good-sized whiting, pollack, or bass, which frequently take the bait. Although this plan is very successful with small mullet, it rarely succeeds with large ones, as the mouths of the latter are so tender that, unless hooked in the throat, which is rarely the case, it is next to impossible to save a fish without a landing net. The first thing to do is to find a place overhanging the water, from which a long-handled landing net may be used. The rod and reel-line described above will answer well, but the reel should be large and free-running. The bottom should be 2yds. of trout gut dyed brown to imitate seaweed, with a quill float carrying two or three large shot and a No. 8 hook; the bait, a ragworm, if to be procured. We have been successful when using the liver of the skate, and have known them take a boiled shrimp or piece of an oyster. In this manner of fishing the bait should be on or near the bottom. The fish should be struck at the first motion of the float, as they will suck the bait into their mouths just as roach do, and blow it out the moment they perceive that anything is attached to it. The red shrimp is better for bait than the brown sort. In Jersey a ground bait of small salted shrimps is used for mullet, and found very efficacious, In some of the French ports mullets are caught in numbers alongside vessels unloading cod-fish, baited with a small live herring fry or whitebait, allowing it to play out and go where it liked.

They will, however, only feed under special circumstances, and take the bait during the winter half of the year better than in the summer months The special local conditions favourable for sport are as follows: Outside a dock gate, near which a stream of fresh water falls into the salt water, or in docks which receive mixed water on the opening of the gates; also in tidal millponds.

The mouth of the mullet is soft, and it prefers soft substances, but as to a certain bait, we do not think there is one, as they are a very uncertain and amazingly cunning fish, and even when taking a bait we have seen them nibble and suck the bait, taking it between their lips and spitting it out once or twice, and, finally, if they find anything hard or distasteful, rejecting it altogether, While they are thus nibbling it is useless to strike, as their lips are so soft that unless the hook be well in the mouth the hold is very apt to give out.

Grey mullet may at times be taken either by fly or bait, three or four flies of the rudest kind being used and trailed out at a distance behind the boat. We have taken grey mullet with a variety of bait. Lug-worm, a small smelt, or, better than either, the liver of a pilchard or herring, or a piece of cabbage which has been boiled with pork or bacon (the last two baits being soft), will be found useful baits.

Also that fine, soft dark-green weed which we often see growing on posts and stones in our slow streams and ponds. It is of a silky or cotton-like texture; and indeed, if very fine soft cotton wool were dyed of a dark green, it would much resemble the weed in question. Its tough silky texture causes it to adhere very firmly when wrapped round the hook.

Mr. Wilcocks also recommends a piece of conger skin, or the whitest part of the skin of the fresh-water eel, about half the size of the finger nail. He also states that he took one or two with the fat from the root of a salted ox tongue. In baiting the eel skin put the hook through once only, with the point showing, as this does not prevent the fish biting. Some fishermen have taken grey mullet with a small live whitebait on a grilse hook.

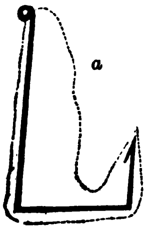
A correspondent informs us that he uses a perch rod, float, and tackle, killing a good number. Another writes: "My line of single gut resembled a paternoster without the ivory beads, on which was placed one or two swan-shot; the hooks (small Limericks), four or five in number, placed at intervals of 9 or 10 inches from each other; and the never-failing bait, a small piece of sand-worm, just sufficient to hide the hook, a light horse-hair reel-line, and a spinning-rod not too stiff. The same tackle, provided the hooks are larger, will answer admirably for bass, or basse—the bait for which fish should be an entire sandworm, with the tail left hanging an inch or more."

Mullets can also be taken with the fly—body, red mohair; red hackle; wing, red feather from the parrot's tail. The rag-worm is, however, the best bait. They will also take the liver and roe of the skate, and sometimes a boiled shrimp. It is of little use fishing if the fish can be seen.

The water should be a little coloured, but not rough. The tackle must be fine. The best time is about July and August.

Another method, employed by the Dover fishermen, is to go upon the pier, and from thence cast out a long line about sixty yards in length, having a large piece of lead attached to the end, so that the waves cannot move it from the bottom when it is cast in. To this attach three or four large hooks on pieces of whalebone; these are baited with what are there called clams; also mussels and pieces of oyster. It is easy to feel when a fish bites. All kinds of fish may be taken in this way, especially bass. Mullets can also be taken with either the splash or trawl net.

The following method of catching grey mullet with a line affords sport, as success entirely depends on dexterity. The hook shaped thus (*a*) a light silk line, sweetened paste for bait put on the hook as shown by the dotted line; sink the bait within a few inches of the bottom, the line to hang over the point of the forefinger; strike by turning back your hand instantly that the delicate suck of the mullet is felt, and, the knack once acquired, you will seldom fail to hook your fish "under the chin." The mullets seem to attack the paste instinctively at the thickest part (*a*), thus bringing the hook point nicely under them.



Another method is to take a boat, the tide making, and to rig a line thus: take ten or more feet of strong gut, at each foot put a piece of cork the size of a "fourpenny bit" and five times as thick; attach the hook to sink 6 inches deep, hook on that a small red shrimp or prawn (not too small) so that it will not die; make fast to your rod and line, cast it overboard, and let it drift away for 20 yards, giving it an occasional gentle pull of about one foot.

It is a good plan to collect mullets together by throwing into the water any kind of refuse fish, a few mealy potatoes, and some of the common green harbour crabs, pounded up and reduced to a pulp; but another method, and the best, is to ground-bait with chervin, concerning which the following extract from Mr. Wilcocks's "Sea Fisherman," page 154, may perhaps be new: "The chervin or shrimp ground bait. With a very fine horsehair net fixed on a triangular frame, each side about thirty inches, and crossed by a pole, expert mullet anglers repair to the flat sands at low water in the Bay of St. Aubin, and other bays in Jersey, and, catching a quantity of minute shrimps there called 'chervin,' salt them down in a jar until wanted, when they take a pint or so with them, and, mixing it to the consistence of gruel, throw a little into the water with a spoon occasionally beside the line; which method collects and keeps the mullet about the place, and seems to whet their appetite for the bait—a piece of a good-sized shrimp, minus the shell."

PERCH.

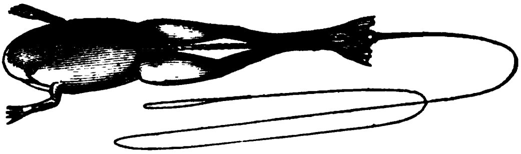
The perch is gregarious, and spawns in March, shedding the spawn in large viscid masses, which are attached to the fibrous roots of trees, to weeds or branches. Perch, in our waters, seldom attain or pass the weight of 4lb. or 5lb. Perch will bite freely during the summer months, both in ponds and rivers; but they discontinue biting earlier in such still waters as are most liable to feel the effects of frost, than they do in more rapid rivers, wherein the perch is in his very best condition about the end of October or in November.

The simplest way of fishing for perch is with a hook and float, fishing at mid-water; or have two hooks, one some eight or ten inches above the other; let the latter or upper one be baited with a live minnow, the which hook on by the membrane of the upper lip; the lower one, which is to be an inch or so from the ground or just clear of it, bait with two red-worms; some like the tail of a lob-worm better. Let these hooks be No. 6 or 7 size, and the float light. Then cast into any likely spot. If you have a bite let him take it well under, and away; for it is not well to hook and loose the fish. If you have no bite after a minute or two, raise your bait nearly to the surface, and let it sink gradually again, so that if there be perch swimming in mid-water they may have an opportunity of seeing it. If this does not answer, then move it a yard or two away, and so repeat the process until you have fished the water all around. Previous to fishing, and particularly in still water, break up three or four worms, and cast them in round about the spot you are going to fish. If minnows are not to be obtained, use two worm baits, but in this case let the lowermost *touch* the ground and the upper be some three or four inches off it. When you take one, try well the spot before leaving it, for they are seldom solitary dwellers. A large fish particularly has often a mate not far off.

The most killing method of perch fishing is with the paternoster. The paternoster is a gut line, at the lower end of which is a bullet; a foot above this is a hook on a piece of gut or bristle, about four or five inches in length above this, according to the depth of the water, there should be another, and perhaps yet another hook. These hooks should be tied about a small cylindrical or perforated piece of lead or bone; the line passes through this and gives the bait the means to swim round and round without tangling with the line, and a shot bitten on the line above and one below the cylinder keeps it in place. The lower hook should be baited with worm, the next with a small gudgeon, and the upper one with a minnow; but as a jack will sometimes take the gudgeon, a fine piece of brass wire is better than gut, and stands out well; it is also less coarse than gimp, and will be taken more freely by perch. The hooks being baited, cast to a distance from you, and let the bullet settle on the bottom. Raise the point of your rod until the line is tight and you feel the bullet, and there hold it. You cannot fail to feel a bite, but do not strike at the first touch; let him give two or three tugs, and lower the point of the rod a little, and slacken line at the first touch, so as to let him have as little resistance as possible; and when you feel two or three tugs in succession, strike. If no bite come, draw in the bullet towards you two or three yards, and so keep working the baits towards you till you have fished all the intervening water, when take a fresh cast in another direction, and so continue until all the water within your reach is fished, and then move onwards.

A live shrimp is a good bait; and they will often take a large red fly.

PIKE.



A frog certainly is, at times, a good bait for jack. Take a middle-size single gimp hook, and pass it through both lips at the side of the frog's mouth, in the same way that you bait with a minnow for perch. To bait a dead frog use with a gorge hook and pass the baiting needle in at the mouth, through the frog, and out at the hind part; tie the hind legs to the wire of the gorge hook (as in the sketch), and use it the same as ordinary gorge bait. The yellow frogs are the best. Spinning with roach, dace, gudgeon, &c., is the most approved method of pike fishing. A brown gold fish will answer if the above-named are unprocurable.

The pike is very fond of an artificial fly. He is by no means particular in the pattern; a weasel's tail with plenty of reddish-coloured wool for body, wings of the "eyes" of peacock's tail feathers, and large green beads for eyes. The end of a calf's tail tied on a double hook, and large green beads for eyes, is also a most admirable bait. Another excellent and most durable bait for pike fishing is as follows: Get a small eel, cut off the head, leaving about 1in. of neck attached; cut off 3½in. of tail, dissect back skin a little way at head end, and cut away a little of the flesh as far as dissected. By then drawing over the dissected skin as it was, the head end forms a socket, into which insert tail, and fasten both with a few stitches through. Use on a large spinning gorge. The bait should be kept in spirits of wine, and as it cannot be torn will last a very long time. This bait presents a most attractive appearance when spinning in the water, and is very killing.

Again, moor the punt in the middle of the lake, on a cord as for sea fishing, that is a stout cord with a heavy lead at the bottom, and tie two or three gimp snap hooks with swivels (the last 3 yards of line being gimp) at equal distances on the line from the bottom, viz., 1 foot, 2 feet, and 3 feet, the lead being at the bottom of the lake. Bait the hooks with live gudgeons or large minnows.

A mode of fishing for pike is with a live mouse, with a hook, or rather spring double hook on each side, without hurting the mouse. The hooks must be made very light, but of the very best steel, or the mouse cannot swim about.

A simple tackle may be thus made: Have a rod made of any common wood, about four feet and a half or five feet long, slightly tapered, with a very large copper wire ring twisted on at either end, the bottom one of course a little distance from the hand; you use no reel, but have your line on a square piece of cork. Then if fishing with live bait, after uncoiling the required length of line, put it over the end ring, bring it round to your hand under the rod, and throw out. Should there be any "kink" out it goes kink and all, there being nothing for it to catch against. Leave a little slack line, and lay the cork in the bottom of the punt; when the fish has gorged take up your rod, use as before, and play him. By this means, if you like, you can manage several lines with one rod. In spinning, of course use both rings, putting the line through. With a little practice you can throw a long line with this rod.

Lay a flue net of fine twine single walled of say seven feet deep by thirty-five yards long, and then beat the fish into the net.

The best plan of keeping pike down, if you cannot resort to netting, is by constant wiring. Numbers of pike may be wired in fine warm weather as they lay basking between the weeds. They may also be speared if the place is unfavourable for wiring. Spawning time is a good time to get them out, as they are then less active and cautious. The small eel-wheels made of wicker-work are capital mediums for taking the smaller jack. If judiciously placed and baited with liver you will get several small jack.

POLLOCK (CALLED IN SCOTLAND LYTHE).

Pollock may be taken either with a hand-line or rod. With the first, the best and most common bait is a small fresh-water eel, placed on the whole length of a rather large salmon-hook from its end to nearly the bend of the hook. The way to prepare and to place this killing bait is thus: The skin from the head and back for about two inches is turned down, and the part skinned is cut off. The hook is then passed through the eel, a length sufficient to cover the whole length of the hook to near the bend; the skin is brought up on the line, and tied fast at the end of the hook, the tying being on the line. The skin is now turned over the eel for about an inch or more, and tied firmly, also, with waxed silk, and the superfluous skin neatly pared off; then it is fit for use. As to size of eel, it may vary to suit the hook, but ought never to exceed about six and a half inches before it is partially skinned as above. The part of the eel when cut is to be exactly placed at the end of the hook next the line. The best eel is the little silver one. This bait is also good for other sea fish, such as mackerel and shad, or scad, and we have more than once known it to be taken by large sea-trout. This bait is used both with rod and hand-line; of course, when with the latter, it is towed, the boat going a moderate speed; with the rod it is used from the shore, where deep water and the known locality for pollock is found; and if from a boat, the rod may be fixed from the after part, or used with the hand, just as salmon are fished for.

As to salt water flies; a good one is made with the pure white hair of a goat's beard, a portion of which is selected of a size and length to resemble a sprat or sand eel, and tied on just as the wings of a salmon-fly are, but let the tying extend at least a half-inch along the hook; a little red or yellow or light-blue mohair is wound along the hook in the manner of the salmon-fly, and ribbed with broad gold or silver tinsel. With such a fly used at the proper time (the evening) either from a boat or from the shore the finest sport can be had. The line should be the strongest salmon tackle, and as fine as it can be, consistent with sufficient strength, for pollock of even 12lb. and 14lb. are often caught. Then, as the season advances to harvest, there is another way of catching these sporting fish; it is by anchoring in the evening near those sunken rocks and foul ground noted for pollock of both kinds—the black, a very heavy fish, and the whiting pollock. Bait is then used composed of fresh sprats or shrimps; in this way great sport is frequently obtained, and the fishermen sometimes bring in large red gurnet, conger eels, and hake. The rod is used as well as the hand-line in this sort of fishing.

An imitation of a sand-eel made of chamois leather is a good bait. Also a large artificial pike bait.

A live shrimp is a capital bait.

ROACH.

A plan of roach fishing is to fish with a large piece of paste made into the form of a cup, in which insert a pinch of dry bran. This gives forth particles of bran as it floats with the stream, and attracts fish. Do not strike at the nibbles. Some anglers place a moderate-sized red bead at the top of the shank of the hook, and place a gentle below. This plan is said to be very killing.

Roach take the fly soon after spawning, and may be caught during June, July, and August. They do not, as a rule, tenant rough streams, although they are to be found in comparatively shallow ones, especially on a warm day, migrating to deeper places as the sun goes down. Under and between water-lilies and similar broad-leaved plants are favourite haunts. The angler must throw his flies with great nicety under these circumstances, and, as there is often but little motion in the water, they should be dressed with soft materials, or they will fail to appear life-like.

Fly-fishing for roach does not differ mechanically from ordinary trouting with the fly; but a single horsehair casting line can at all times be used. They are not particular about the kind of fly, but will take almost anything if it is allowed to be just below the surface, and is not kept moving too quickly.

The furnace hackle with peacock body; the black palmer, dotterel hackle, with dirty yellow silk body; a well-imitated green drake, the coch-y-bondhu, or with a fly made of red hackle, and with a tough gentle put on the hook instead of any wrapping for the body of the fly. A small coch-y-bondhu, with a gilt tag at the end, and black gnat, they seem to like best. As roach seldom come to the top of the water, put a good-sized shot a few inches above the fly, and sink it down to them. Look out for a shoal, as they keep incessantly swimming backwards and forwards, quietly throw over them, letting the fly sink; and, as it is being drawn up again, they generally take it. The hotter and brighter the weather the better the sport. The artificial fly—house or dung fly, black gnat, and red ant, &c.—if the hook be moreover armed with a live gentle, is a most killing lure for heavy roach. A natural fly, a common meat fly or house fly, is far more deadly than the artificial fly; with the natural baits the angler can scarcely use too small a hook. If he comes across a shoal of roach, he should always get behind them, and cast his flies in front of them. Some anglers whip with either a real or an indiarubber gentle.

SALMON.

Packing of.—In Sweden they cut two boards the size of the fish, take out the gills and guts, fill the mouth and belly with bread soaked in coarse brandy, sew them up, wrap the fish in wet grass, and, putting it between the boards, tie them tight round.

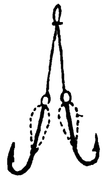
Scringing and Splashing for.—Scringing is effected thus: Upon lightish (but not moonlight) nights, at the turn of high-water, when the fish are feeding in-shore, a large net is carefully and noiselessly lowered from a boat (the oars and thowls of which should be muffled with a piece of old sheepskin) close to the shore, describing an arc of a circle; the net is then hauled in by the fishermen, a level beach being chosen for the landing-place, the water being beaten or splashed to keep the fish well below and prevent their escaping over the net. A scringe is a trawl, or drag-net, has a bag or purse in its centre, and is used as described; a splash-net has no bag or purse, although deeper in the centre than at the sides, and is not dragged ashore, but merely located in any bay or nook as advantageously relatively to the side of the shore as possible, and with the same preliminary precautions in approaching. The moderate-sized fish mesh, and are caught by their gills, the larger ones by their teeth. When the splashing has been fully performed, and you fancy you have driven all the fish out of their hiding-places, then raise the net. In raising the net the careful and skilful co-operation of two persons is required, in order that the fish may be secured, and the net judiciously arranged for resetting—one having charge of the lead and the other of the cork-line, raising and drawing in the sides of the net simultaneously and equally, and in such a manner as to form a bag. A board at the stern of the boat, with rounded edges, placed across the gunwale, will receive the net, the lead-line lying on one side and the cork-line on the other. In resetting the net it is important that the lead-line should be the inner line, *i. e.*, that which is nearest the shore, because, if the lead-line be the outer one, you cannot make a bag in taking up the net, and the net will come in very badly for placing properly on the board, and cause much extra trouble. For successful splashing three persons are required, whereas for scringing five are absolutely necessary. Some fish will always escape from the splash, whereas it is most difficult for any good fish to escape from the trawl if it be properly managed; and it is not necessary for any of the party to go into the water in the one method, whereas with the scringe four persons must go in.

Splashing is done exclusively at night. A good splash-net should be about one hundred yards in length, and about four yards in depth at the centre, gradually diminishing to two yards towards the extreme ends. Three persons are required for its effective use. The net in the first instance is placed on a board which rests on the gunwale at the stern of the boat, doubled carefully backwards and forwards, with the lead on the one side and the corks on the other; and to perform this operation effectually, so that the net may escape cleverly into the water, three persons are required—one to deliver the net, and the other two to receive it, one placing the lead-line, the other the cork one. A stone, of sufficient weight to keep the net in its place when in the water, must then be fastened to the line at each end of the net. Before making the first venture the net must be well saturated with water, otherwise it would not go out well. Splashing in Scotland is generally commenced in May, and carried on through the summer months, on any fine calm night when the tide suits—at the flow till abeut half tide is the most favourable time. The places selected for splashing are those in any nook, bay, or creek into which any small stream or rivulet empties itself, and where there is an even sandy bottom. If there has been a shower during the day the chances of success will be much increased, as on these occasions salmon and salmon-trout come close into the shore; but these spots must be approached with the greatest caution, and as silently as possible. When one stone is dropped as close to the shore as possible, so as not to admit of fish passing between the net and the shore, the boat is then rowed rapidly across to the most advantageous spot at which to drop the stone at the other end of the net; if the bay or nook be narrow, the whole intermediate space is inclosed. The splashing with the oars, backwards and forwards, must then be instantly and vigorously prosecuted.

Some skill and practice are required in taking in the net, so as not to lose any fish, and also to replace it on the board in such a manner that it will go out clean and well on the next occasion; this operation requires two persons, one for each line, and is considerably facilitated by the person at the oars performing his part of the business judiciously.

The scringe decidedly takes the precedence of the splash, provided sufficient strength as well as skill be employed for its effective management—because, if the net is not drawn equally and continuously towards the shore, many fish will escape. A fifth person must follow the net in a boat, so as to be able to raise and disengage any part of it which might become entangled. All trawling and splashing ground should be previously reconnoitred by daylight, and all impediments removed, and particular spots marked, so that they may be recognised at night, in order that the splasher and troller may know exactly where they may operate to the most advantage. With the splash it is important to know the exact depth of the water, and also that part of the shore on which you can most advantageously throw out the stone which holds the one end of your net, so that no fish can pass either under the net or between it and the shore—in which case even if the bay be so wide that you cannot reach the other side of it with the other end of your net, you have a secure corner into which you can easily drive the greater part of the fish; and, if you act promptly, vigorously, skilfully, few fish will escape. With the scringe it will be necessary to know previously the precise distance from the shore at which you can drop each pair of men into the water with their respective end of the ropes, and also the exact spot on which the net may be most advantageously drawn ashore.

Sulky fish, to move.—Weave a few straws or two or three rushes into a chaplet round the rod, push it over the point of the rod and let it run down the line. A small forked twig with the points fastened together will answer as well, or a piece of paper with a hole in the middle put up the rod, as boys do messengers with their kites.



Worm-baiting for Salmon.—The hooks used are the common tinned sea fish-hooks, of a moderately large salmon fly-size. On the shank is first soldered a small loop of copper wire (not too soft), and afterwards lead, in a fine tapering form, run on the shank in a plaster of Paris or other mould which serves the purpose of sinking the bait. The thickest part of the lead is rather less than the compass of an ordinary tobacco-pipe stem, and the worm is threaded over this lead; but in order to do this the lead should be nicely tapered and run smoothly off on the shank of the hook; the worm will not slip down after being passed slightly over the loop and a second worm run on the bend. A length of salmon gut is then taken, and a hook fastened to each end; the gut is then looped in the centre, as in the sketch, and to this the ordinary tug casting-line is attached. The worms should be the common dew or lob-worm; the larger the better, and tough, by being well scoured in moss for a week or so; the rod about 15ft., a little stiffer of course than for the fly; and a waterproof *wove* silk line, to run easily through the rings. The method of procedure is as follows: Having approached the cast, the line is held at the noose above the bait, between the forefinger and thumb of the same hand which holds the rod, and a yard or so of line pulled from the reel and held in a couple of coils in the fingers of the left hand, in order to "give" in casting and to allow of a further throw. The rod is then swept out from left to right, a little above and up stream; and when the bait has settled to the bottom a smart stroke is given to the point of the rod, by which the bait springs upwards two or three feet, like a frog jumping, and after settling again by its own weight the same process is repeated, until the bait is brought round and below the angler, the line at the same time being gradually recovered into the left hand for the next cast.

SMELTS.

Mr. Greville Fennell says that the way that most smelts are taken by angling is with a paternoster baited with the flesh of the shrimp on a small hook. It matters little whether the hook shows or not; but, if the angler desires to be nice he should make a shrimp paste in a mortar, and place a piece about the size of a pea on each hook. The value of the bait is enhanced by being placed on the hook with the fingers smelling of a captured fish. In the absence of shrimps, whether boiled or raw—in the former case, salt should not be used—the back of the smelt may be cut longitudinally into slips of about the eighth of an inch broad, and these again divided into squares of the same width. In this way, and with four, six, or even ten hooks standing out paternoster fashion, according to the depth of the water fished in, two-thirds of the hooks are often engaged at once if the fish are there, for if they are, excepting in confined waters, they will assuredly feed. The top hook, at the commencement of angling, should not be above a yard deep, but in this case the angler should be screened from the view of the smelts. If he does not then get any visitors to the top hook, he may remove his float higher up his line until he does, for this is invariably an indication that the top of the stratum of the school of fish is arrived at. Should, therefore, the top and bottom hook both prove effective, then another hook or more may be put on, lengthening the line in operation, but not altering the situation of that hook which is to surmount all the others. If, again, the top or any one or more hooks is active and the others idle, rig up a line with hooks attached and a length of gut and one shot, which shall just reach the approved depth; and then, attaching a cork to the bottom of the line, let the whole float with the stream, and the pendant hooks will then reach the depth at which the fish are feeding. By this means you increase your chances in the ratio of your hooks. You need not always trouble yourself to land one or more fish, but you may leave them to pull about the other baits, which will be an additional attraction to their fellows to join in the gambol. You need not fear much or any entanglement if the stream is strong, and the cork sufficiently large to keep up the tension of the line. In this way, only with lighter tackle, bleak may be taken in our rivers in large quantities; but their mouths being much more tender than that of smelts, they require to be removed from the hooks at once. For bleak a pinch or two of dry bran floating down the stream is sufficient attraction, and a similar surface bait might perhaps be tried with effect with smelts. Pieces of eel are likewise a tough and serviceable bait, and bits of lobster are good. When fishing with a float, the smelt throws the float up, as do bream. At certain times, and the best times likewise, they run on to shoal waters, and are taken in large numbers with a fly. March and April are as good as any months for them; but the best is a little before they spawn. Many of the fishermen in the docks around our coast take the smaller smelt with a round sink and rise net run over a projecting pole from the head of their boats. *The Naturalist's Cabinet* says that the tail of a boiled shrimp, not skinned, is a good bait, as likewise are gentles and red paste; and that a few crumbs of bread should be thrown in now and then to keep them together.

One of the best baits for smelts is the following: Take off the head of an unboiled shrimp, and squeeze out from the shell a bit, pea size (without shell on) or less, and put this on each hook (using two or even three); no float at all; merely sink, and draw as with grasshopper.

A correspondent writes: a gentle is the best bait. I use common roach-tackle with a light float, and fish about eighteen inches deep. The top of the tide is by far the best time, and they are usually found in harbours that have no stream coming into the upper part of the basin. I have caught smelts with small pieces of white greaves, and sometimes with an artificial fly, with a gentle on the point of the hook.

Another says the best bait for smelts is the sandworm, which, with the assistance of a fork, may be procured at low-water on almost any part of our coast. "The rod I use is a cane roach-rod. The tackle consists of about two yards of gut, upon which I place a few shots and six hooks (No. 9 or 10), at intervals of about one foot, *à la paternoster*, minus the ivories. A small portion of the worm, just sufficient to cover the hook, is the best method of baiting. The same gear, &c., also answers admirably for mullet."

SOLES.

At low water bury about one foot in the sand a stone, attached to which is a piece of cord; at the end of this is a small brass ring, which is left uncovered by the sand. Through this ring pass half the line free from hooks, and tie the two ends together, thus making a chain and enabling the angler to pull in his line to rebait or take off a fish and haul it out again with the greatest ease.

TENCH.

The rod should be stout, not too long, with a fine but strong gut line; the float for rivers should be a long tapered cork, for ponds a quill; especially eschew the pot-bellied float; the hook from 7 to 10, according to circumstances; the bait, paste, worms, or gentles; many others are used, but these are the best. Let the paste be dough or unbaked bread—it is clean, adheres well to the hook, and the small quantity of yeast it contains appears to please the palate of the fish. In rivers let the bait slightly drag on the ground; in ponds fish about half an inch from the bottom, unless it is clear, then let the bait touch the ground. It is as well to ground-bait over night for all bottom-fishing, but it should be done in moderation, especially in ponds. Greaves, meal, and bran are good ground-baits. If fishing with worms or gentles, drop in a clay ball, with a few of either of these gentry in. When the fish bites, or rather when the float moves, give time, for tench are slow in taking the bait, and are easily alarmed. When the fish is hooked it is a favourite dodge with him to try and bury himself in the soft mud; this must be guarded against by keeping the line firm, with the point of the rod elevated, but without pulling.

The tench will bite greedily at a worm from September until the end of May, provided the weather is open and mild. For netting use a "drum" net, with a brick to sink it. Place bright red flowers in it, such as peonies, &c., and sometimes carp will join the party; but you may take all the tench in the pool.

TROUT.

The large *Salmones feroces* never run freely when a loch is full or discoloured, although the smaller ones may. Brown trout also often rise well in flooded loch, if the sky is moderately bright and the wind fair. Small feroces a of five or six pounds frequently take the fly at such times. August, and the latter half of July, especially if very hot, is the worst time for loch-fishing. When you are trolling with a north wind, or a still more unfortunate easterly breeze, pay most attention to those parts where hills and gullies make the wind strike as if from south or west. When the wind scours the loch in frequent gusts, and as suddenly dies away into a calm, that troller has a great advantage who knows all the straths and hollows where it comes down and first strikes any good water.

In the early part of the season the points keep most fish, As the year advances, the bays are the surest find. In autumn a heavy fish is often hooked about the mouths or estuaries of rivers and burns. When one of these fish strikes, hooks, and drops off, instantly let out some line with your hand from the reel, and he will sometimes follow and fasten firmly.

In fine calm summer nights, fish feed so well as to be rather lazy next day. This applies to brown trout in particular. A rough night, succeeded by a calmer day, has of course the contrary effect. In still sunny weather the *Salmo ferox* feeds nearer the top. Troll then with a finer wheel-line, a much lighter casting-line, no lead, and smaller swivels. Often the best fish are taken in that sort of weather. As a *general* rule, however, the nearer the bottom you troll for large fish the better.

In the smaller shallower lochs, the ferox are often collected in shoals. Should you hook or kill one, try them again over the same place until they stop running. In minnow-trolling for yellow trout, you may often have great success by attending to this rule. But when you happen upon a shoal of sea-trout, salmon, or grilses in a loch, be especially particular to come over them again and again, whether you are fishing with the troll or the fly. In *very shallow* lochs the brown trout are often afraid to come within reach of the shores till evening.

WHITING.

When other baits fail, try the eye of the dogfish.

WHITING POUTS.

Bait for.—The rag worm and log worm are first-rate as a bait in rivers and estuaries, and the live shrimp at sea.

FISH HATCHING.

Trout spawn in December and January, grayling in March and April. The process described for one will apply to both. The stock should be carefully selected. Trout vary much in edible qualities, and unknown breeds should not be adopted merely because they can be easily obtained.

The best site for a breeding ground is by a clear stream running through grass land or gravel, and the cuttings for depositing the ova and rearing the fish must all be clear of floods. They must also be so arranged as to keep apart the parent fish, the ova, and the successive broods. The first business is to prepare the rills. That in which the old fish are first placed, and which we may call No. 1, should have a gravelly shallow near its upper end, and immediately above this a narrow cutting in which a close-fitting net can be deposited. Rill No. 2, intended to receive the fish after they have been spawned, should be the deepest of any, and should be connected by a cutting (stopped when requisite) with No. 1. The stock should be obtained some months before spawning-time, and none should be less than three years old. If obtained within a short distance any large vessel half filled with water, and one-fourth more with moss or valisneria, may be used to convey them, but for long distances the safest plan is a metal cylinder with a force-pump attached, by which air is constantly supplied. By this means fish may be safely transported to any distance. The temperature during removal is of great consequence. Cold does not affect them, but one hot day may kill all. When spawning time comes the old fish will be seen on the shallows of No. 1, and on any person showing himself they will run up the cutting, whence they may be quietly lifted by the net. Two-thirds of the fish caught for spawning purposes in an open river are either too young or not in the requisite condition, and thus the work is delayed when every moment is precious.

Before attempting to manipulate, the operator should have had some practice in handling live fish, or they will slip through his cold fingers like quicksilver. By taking six or eight fish in the net, you are pretty sure to secure both males and females; but if all of one sex, they must be instantly put into some vessel filled with water, such as a tin milk-pail, and kept till the next haul. Milt and ova, or soft and hard roe, are too well known to need description. On taking the ripe fish in the hand the milters and spawners will generally be at once distinguished. A pail, about half-filled with water, being placed near the manipulator, he first takes a male fish, and, holding his head out of the water, but letting his tail remain in it, waits a few moments until he is quiet, and then by softly pressing the sides, from the throat towards the vent, obtains some milt. This he briskly stirs up in the water with his hand, and immediately taking up a female fish, he in like manner obtains whatever ova may be ready. He again directly takes another, or the same, male fish, and expresses a further quantity of milt, and with his hand, as before, but more quietly, mixes all up in the water. The water in the pail should now be nearly all poured off, just leaving enough to cover the ova, and fresh water put in, and this washing process should be repeated three or four times without stopping. Several fish of each sex may be used in the same way without changing the vessel. Should any fish seem exhausted after such unusual treatment, hold it in the water with its nose to a brisk stream for a few minutes, and it will recover. At the end of the day, all that have not been used should be returned in to No. 1. Those that have been spawned should, immediately after the operation, be placed in No. 2, and the vivified ova should be distributed over the gravelly shallows of No. 3. This rill should be the shallowest and most rapid of the series, and if its bed is not gravelly, it must be made so. Towards its lower end a deepish pool should be formed, and in many places large stones should be thrown in for shelter to the young fry. The ova, being heavy, smooth, and flexible, sink through the interstices of the gravel, and are no more seen.

The first stage of the process is now completed, but the breeder, when he has obtained sufficient ova for No. 3, may open the communication between No. 1 and No. 2, and will thus have a second crop from the partially spawned and surplus fish. If the space for rills is limited, No. 2 may be dispensed with, by fencing off part of No. 1. The other plan is, however, by far the best. Should ova be wanted at a distance, it may be sent in clean bottles, packed between layers of damp moss.

FLIES AND FLY-MAKING.

FEATHERS, TO DYE.

In all cases feathers or wool must first be cleansed from grease and next boiled in a mordant of alum and cream of tartar.

Black.—Impregnate the material with the acetate of iron mordant, and then boil in a decoction of madder and logwood.

Blue.—Every shade may be given by indigo; or dip in silk dye; or put a tablespoonful of the paste blue (sold at drysalters') into your dye-pot, which should be filled with soft water; wash the hackles and put them into the dye, wet. Boil slowly for two hours, and rinse. More or less water will vary the shade.

Claret.—Boil two handfuls of ground Brazil-wood and one of log-wood for an hour in a dye pot. Put a table-spoonful of oil of vitriol into half a teacupful of cold water. When the dye-pot is a little cool add the vitriol; stir; put in the hackles, and boil gently for two hours. Take out the hackles and put them into cold water, and add to the dye a bit of copperas as big as a nut, and about a quarter as much pearl-ashes. Put in the hackles again, and when you have the proper shade, rinse well and finish in urine, which brightens the tint. Or, take powdered Brazil-wood; to it add a little cochineal, and if a purplish tint is required a small piece of prepared log-wood, taking care this latter does not meet iron, or it will turn black. A splendid colour for wool is obtained by long and gentle boiling with cochineal only.

Crimson.—Dip in acetate of alumina mordant, then in a boiling hot decoction of Brazil wood; and last of all pass through a bath of cudbear.

Deep Red.—Proceed as for crimson, omitting the cudbear bath.

Green for May-fly Wings.—Dissolve two parts of sugar of lead in a moderate quantity of cold water, and three parts of powdered alum in the same quantity of hot water; mix, and after subsidence, separate the clear liquid. Steep the feather in this for twelve or more hours, when squeeze out the superfluous liquid from the feathers, and then dry them, letting them remain three days or more before the fire, or in some warm situation. Next make a decoction of the common weld (*Roseda luteola*) with boiling water in a copper or brass vessel. Throw out the exhausted plant, and having previously washed the feathers in hot water, dip them for a few seconds in the decoction, when they will take a yellow colour, more or less intense according to the time of immersion. To obtain the different shades of green, dip the feathers now into a weak solution of sulphate of iron. Or use the root of the common barberry. The more you use of the outer rind, the greener it is, the yellowest being the centre. Wash it, cut it into shavings, and boil it for some hours with plenty of soft water over a slow fire; then, removing the roots, boil harder, to evaporate the water and get a stronger extract. At the season, when the sap is down, there is most colour in the roots. After washing the feathers well in soap and water, and boiling them in soft water with alum and cream of tartar, remove them still wet into the dye pot, and give them a good boil, adding turmeric if wished more yellow.

Again, try Judson's simple dyes, sold by every chemist in sixpenny ottles. First dye the feather a canary yellow, then dip it, wholly or partially, into the blue dye until the required green is obtained. For dyeing swan or goose feathers, hackles, &c., for salmon flies, these dyes are excellent. They are prepared by Judson and Son, 19A, Coleman-street, London. The feathers should be previously steeped in a warm solution of soda; each bottle contains directions for use.

Again, take three or four red onions, peel them, and put them in a pipkin; just cover them with soft water; put in a piece of alum the size of a nut, simmer them till you get the shade, then put in your bunches of feathers.

Olive Dun.—One ounce of French berry, twopennyworth of turmeric, alum the size of two walnuts, three pints of water. The turmeric must be increased or diminished as a greater or less yellow hue is required. Boil the material five minutes in the alum, then a quarter of an hour in the dye; drop in twelve drops of oil of vitriol; then boil again for twelve minutes, and wash thoroughly in cold water.

Orange.—For orange take a tablespoonful of best turmeric, and mix it in a pint and a half of hot soft water, then boil for fifteen minutes; into this dye remove the feathers, &c., still hot and wet, and continue to boil till they are dark enough to suit; add more turmeric if not deep enough. If a reddish orange is required add a very small quantity of either Brazil wood powder, or bruised cochineal, or, better still, a few drops of the dye made by simmering them in water.

FLY-MAKING, HINTS ON.

All colours, whether for trout or salmon flies, should be chosen one or two shades lighter than the natural fly; because, when the artificial fly is whet, the colour, whether body, wing, or hackle, is then darker. The materials (silk, mohair, feathers, &c.) should be viewed by holding them up above the eye and in the sunlight, as the fish looks at them, or dip them in water and compare with the colour to be matched until you get the propor shade when wet. Dyed feathers (particularly for salmon flies) are often preferable to the natural feather; that is, when the natural (in colour) feather will not be the same when you take a fish-eye view of it between you and the light. For instance: take that beautiful feather from the tail of a blue macaw, hold it up to the light, and it is neither blue nor yellow; then take a yellow and blue dyed feather, and view them in the same way, and the colour is perfect. Therefore a strip from the yellow and another from the blue put together will make as good, if not better, feelers than the macaw feather. The best feathers to dye for this purpose are the white peacock or white turkey. When you have the proper colours and the right-sized hook, it does not matter how clumsily you tie your fly at first; it will kill. It requires to be larger than the natural fly, which spreads dry on the surface of the water. Colour and size of hook is all that is necessary to begin with. The best position for fly-making is before a window some four or five feet above the floor, as you can in that way best choose your materials, and you are in somewhat the same position with regard to light that salmon or trout are when on the feed.

FLY-MAKING, MATERIALS FOR.

All the requirements, specified below, can be carried in a fair-sized pocket-book, viz., a small, sharp-pointed pair of scissors; a pair of fly-pliers; a sharp, long needle, to pick out the dubbing and separate the fibres of the feathers; some strong (but as fine as possible) silk; some good wax; a little table-vice, to stick into a table or board, is very useful; a few ends of Berlin wool and floss silk of different colours; good hooks of all sizes and some gut; an eye-feather from the peacock's tail, and a little ostrich harl (fibres from the feather) for forming the bodies; a few gaudy feathers—the most useful for the salmon or lake-trout fisher are golden pheasants, both top-knot and tippet, blue and red macaws, blue jay wing, speckled scapulars of the mallard (taken in winter), bittern, hen pheasant, or bustard; and for the trout-fisher, mallard scapulars for the May-flies, and small brown feathers from the landrail, starling wing (a very good general feather), woodcock, dottrel, and wren. For both he will require some cocks' hackles of every size and shade of colour; and for large gaudy salmon-flies some gold and silver twist and tinsel. Let everything be wrapped up separately in tissue paper, and stowed away in the pockets of a leather book.

Those materials are the best for dubbing which possess the qualities of lightness, transparency, and mobility, or a disposition to play about in the water. Hog's down, from not sucking in water, is light; it is also transparent; may be dyed of the most killing colours; and is, on the whole, the best material for the bodies, as they are generally called, of salmon flies. Cocks' hackles are likewise light and transparent, and may be dyed like the pig's wool; but they are stiff and motionless in the water However, they are more suitable for a salmon than for a trout-fly—at least, in clear, quiet water. The best colours are blood red, the lightest possible shade of blue (almost silver grey), golden olive, and golden yellow.

The best feathers are those of the golden and common pheasant, owing to their colour and *transparency*. After them, the four feathers found on the back of a mallard, which are semi-transparent. This feather, as well as that of the brown turkey, must be sparingly used when dead leaves are floating down at all depths, or, indeed, may then be replaced by that of the tame drake. The neck-feathers of a light reddish-coloured woodcock; a couple of wings of each of the following birds—yellow plover, snipe, thrush, fieldfare, and dottrell; the *quills* of a landrail, stare, fieldfare, and thrush; the tail of a partridge and wren, with some of the grey feathers of the former, and the equal-fibred feathers growing between body and wing of the latter; some blue feathers from a tomtit, with a good supply of jay's quills, and the brown feathers of a mallard; and the dark grey ones of the widgeon and teal for loch fishing. The small, narrow, barred feathers under the wing of the merlin dyed a pale yellow, and tied on in pairs, make a capital wing for Welsh flies where bittern cannot be got. A few fibres are sometimes (not often) used from the tail feathers, for mixing. The feather from the snipe's wing is a long narrow feather; under the wing white barred or spotted with black. When dyed pale yellow it makes a good wing for a salmon fly when bittern hackle cannot be obtained. There is a similar feather under the hawk's wing.

Blue feathers adapted for fly-fishing may be obtained from the Blue Spanish fowls, known as Andalusians; from the Blue Bantams, which are sometimes termed Flyfishers; and the Blue Polish. The last named, however, do not invariably breed true to colour; the former may be depended on. There is also in some parts of Scotland a slaty blue mongrel fowl, which may be depended on as producing a fair proportion of chicks of its own colour.

In the way of silk, a skein or two of each of the following colours—slate, straw, orange, and blood-red, of the palest shades. Hare's ears and mohairs complete the catalogue. Floss and arming silk are requisite.

Moths from feathers, to keep.—Pepper thoroughly with white pepper, and keep from the damp. Expose to the air occasionally, particularly in winter. Camphor is useful, but dissolves rapidly. Cedar chips are also advantageous. Tobacco-leaf, broken up small, will be found very useful in keeping it out of fly-books; but probably nothing surpasses a few drops of spirits of turpentine, on a piece of flannel or brown paper, if the smell be not an insuperable objection. If the moth gets in carefully pick out the damaged feathers.

SALMON FLY, TO DRESS A.

Select some hook and gut, and whip on as in a trout fly. Fix on your tail with two turns and one turn under it. Then whip on the twist and a hackle, whipping it on at the points. Before putting on your hackle take the point in your left hand, the stump in your right, the inside of the hackle towards your mouth; then, between your lips draw up the fibres of the hackle, so that the top fibres may stand up and the bottom ones be pulled up towards them. If you use coloured worsted for the body, whip twice round the short end, leaving the long end hanging out towards the tail; then whip your silk back to the head; then twist your worsted back to the head, and fasten off; then your twist and then your hackle, fastening each off with two turns. If you use fur or dubbing, you must spin it on to your silk between your fingers, and whip it round the hook with the silk, then fasten a fibre of ostrich or peacock harl for the head; then whip on your wings with three turns, letting the ends of the fibres come under the hook at each side then form your head by twisting round the harl, and finish off with the invisible knot and varnish. In dressing a large salmon fly, the table-vice will prove very useful for holding the bend of the hook in, instead of the fingers. A whole blue and black feather from the jay's wing may often be whipped round on each side of the wing of the salmon fly, and prove very effectual.

TROUT FLY, TO DRESS A.

First choose your hook and gut; bite the gut at the end, and wax both your hook and silk to prevent the hook slipping off the gut. Wind your silk with a few turns round the hook towards the head; then putting on the gut, whip it tightly on by working back to the end of the hook. Under the last turns of the silk, at the bend, insert two or three whisks out of a mallard or other feather, on the back of the hook, standing out behind to form the tail; then the floss silk, wool, or harl for the body; and, last of all, the tinsel, if required. Tie these all tight, and wind your silk round the shaft of the hook back to the head. You then take the free end of your floss silk, harl, or wool, between your little fly-pliers, and wind it tightly round the shank of the hook back to the head, and tie it tightly down by one turn of the silk round it, and make it fast. Then proceed in the same manner with the tinsel, fastening that off at the head, letting the end of the silk hang down. The body is now made, unless you wish to make a palmer or buzz-fly (with the hackle wound all round the body), and then you must whip the three or four end-whisks of a fine hackle on at the tail, above the tinsel, letting the stump stand out in the direction of the tail, before you whip your silk back towards the head of the hook. You will also wind the hackle round the body, as you have already done your dubbing and tinsel, and tie it down at the head. The palmer is now made; but if you want to make a winged fly you will strip off the required number of fibres from any feather you wish to use, and tie them on the top or side of the hook, either single or divided, and finish tightly off with a couple of turns; snip away all the ends closely with your scissors, and the buzz-fly is made. If you only require a hackle at the shoulder, you will not bend it on at the tail, but after the body is finished and before you put on your wings, you will fasten the end of a hackle at the head of the hook (instead of the bend) and secure it firmly; wind the hackle round the hook at the place where it is inserted, and when it is sufficiently thick, and the fibres stand well out, tie it down, and then put on your wings.

To make your flies look neat, touch the head with a little varnish.

SILVER TINSEL, TO RESTORE THE COLOUR OF.

Immerse the flies in a solution of cyanide of potassium, 10 grains to the ounce of water. Well rinse in cold water when taken out of the solution.

It is said that keeping the flies near a raw onion will prevent their tarnishing.

VARNISH, FOR.

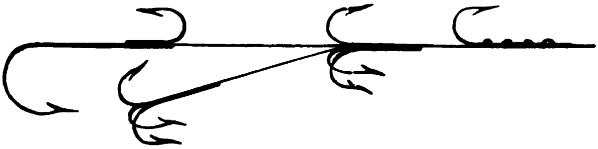
Take any spirit or oil varnish, and then dip the point of a pin or needle into the bottle of varnish to the depth of about one-eighth of an inch, and then apply it to the fly. Two dips are sufficient—one on each side of the head. Salmon flies should be varnished before the head is put on, and will take more varnish; and when the head is worked on, one drop more on the silk which fastens it off.

Get half a stick of black sealing-wax, pound it fine, put it in a small glass bottle, and add a wine glass or a little more of good spirits of wine, so as to make it of the consistency of paint, then cork tightly; in about three hours it will be a first-rate waterproof varnish, which can be applied to the heads of all artificial flies; but they should not be used until the next day, to allow the varnish to set and harden.

Dissolve a small quantity of shellac in about twice the bulk of spirits of wine, and be sure that all varnishings are dry before the tackle is used.

FLIGHTS.

CHOLMONDELEY PENNELL FLIGHT



The annexed diagram shows, upon a reduced scale, the number and arrangement of the hooks. The small hook fastened on to the shank of the tail-hook serves to keep the latter firmly fixed in its place, and, from being reversed, is far less liable to slip than one whipped in the usual way. The triangle above it is then hooked in, higher up, on the shoulder of the bait; and the flying triangle lower down, on the opposite side. Thus, wherever the fish seizes, he is certain of being struck by one or other of these triangles, which never interfere with each other in their operations. It will be observed that the lip-hook is comparatively small, and for this reason, that it seldom or never strikes a fish, and is more seen than any other hook on the flight. It is desirable also to keep the mouth of the bait shut as closely as possible. If baits are scarce, a stitch through the gills will be found very serviceable in making them last longer.

FRANCIS FLIGHT.

By reference to the accompanying cuts it will be seen (in Fig 1) that the tackle is made in two distinct parts; Fig. 2 shows the tackle connected. To bait it, take any small fish (gudgeon or dace, or whatever may be the bait) and run a baiting-needle in at the side of the tail, straight through the fish, keeping along the spine, and out of the mouth, taking care that it is passed through *straight*, so that there may be no crooked lay in the bait, or it will not spin properly. Then hook on the loop *a* (Fig. 1), and draw the bait down until it hangs on the hook (A) as is shown in Fig. 3. Now pass the loop *a* successively through the two little eyes in the single hook on B, slip it down to the nose of the bait, and hook through at the nose, as shown at *c* in Fig. 3. Then, seeing that the tail is sufficiently and properly crooked, and that the rest of the bait is quite straight and true take a fragment of waxed silk and lap round the lip-hook and gut three or four times tightly, as shown at *d* (Fig. 3), to prevent its slipping. Stick one of the hooks of the triangle, as at *e*, into the off-side of the bait, so as to hook the fish should he come on the off side, when probably in his first struggle the big hook will also take a hold. The bait is then attached to

Fig. 1.

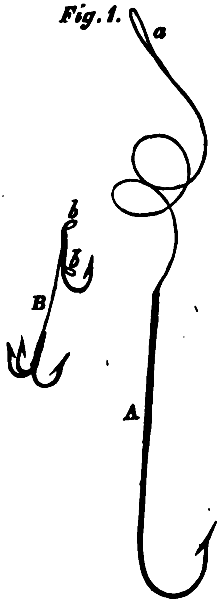


Fig. 2.

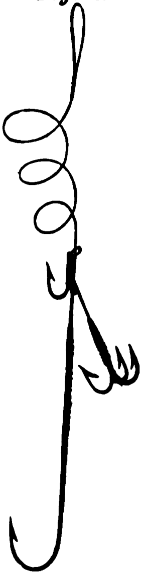
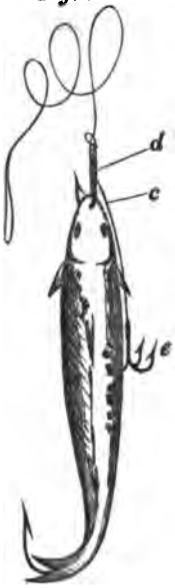


Fig. 3.



the trace, the lowest part of the trace being a large loop lashed to the last swivel, and the baiting is complete.

FRANCIS FLIGHT, NO. 2.

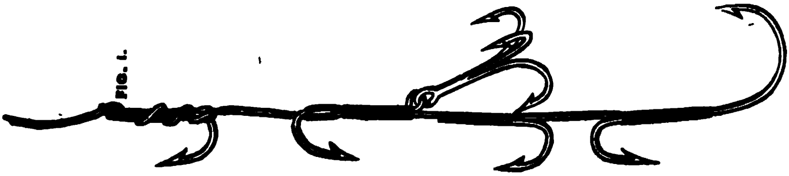


FIG. 1.

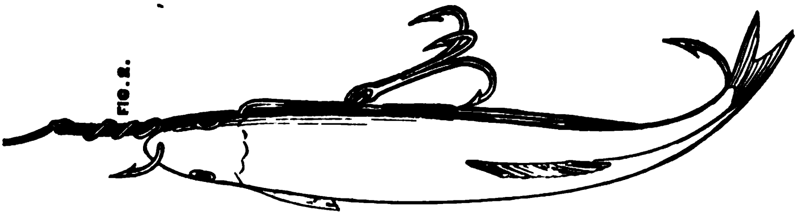
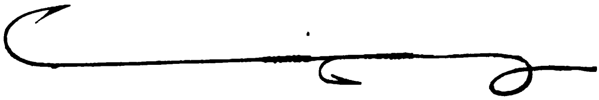


FIG. 2.

To bait the tackle, insert the large tail hook well up the side of the fish, far enough up, to hide as much as possible of the shank under the skin. Having buried the hook, insert the reverse part of the hook, so as to maintain a sufficient crook of the tail; and when this is done properly no great deal of the tail hook is visible save the point and back, and the bend of the reverse hook. Then comes a single hook, which is simply a hook to hold the bait, and to keep the gut or gimp close to the side and straight. Then, keeping the gut or gimp tight and straight, put in the reverse eye-hook appertaining to the triangle. Now, when this is in, it will be seen that the bait from head to shoulder is kept so that it cannot give.

IRISH FLIGHT.

It consists of but two hooks, a larger and a smaller one, whipped thus: The point of the larger one is inserted into the throat of the bait, and brought out near the vent, which gives the necessary curve for producing a spinning motion. The smaller hook is introduced below the chin, and brought out between the eyes, which keeps the mouth closed, and the bait in its proper position. A larger size is used, but in the same manner, with a frog for pike.



THE OLD STYLE OF FLIGHT.

Fig. 1.

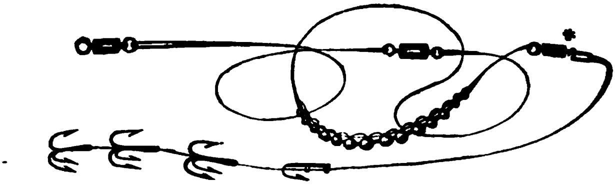


Fig. 2

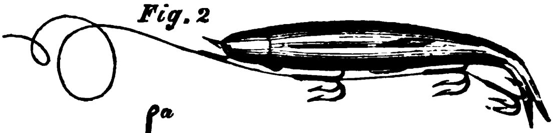


Fig. 3

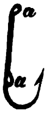


Fig. 4.

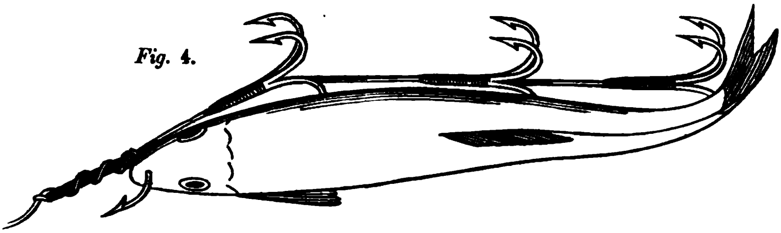


Fig. 1. A spinning trace and flight of hooks. It must be observed that the swivel marked with the * is a hook swivel, for the convenience of changing the flight of hooks.

Fig. 2. The hooks baited with small fish.

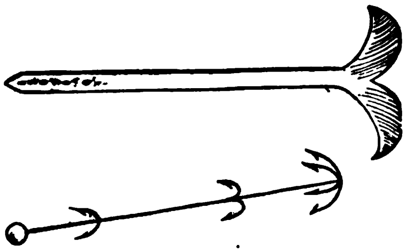
Fig. 3. The lip hook; *a a* loops lashed on the hook for the gimp to pass through.

Fig. 4. Large fish baited for pike.

EEL FLIGHT, THE.

Another excellent and most durable bait for pike-fishing is as follows:— Get a small eel, cut off the head, leaving about one inch of neck attached; cut off 3½in. of tail, dissect back the skin a little way at the head end, and cut away a little of the flesh as far as dissected. By then drawing over the dissected skin as it was, the head end forms a socket, into which insert the tail, and fasten both with a few stitches through. Use on a large spinning-gorge. The bait should be kept in spirits of wine, and as it cannot be torn will last a very long time.

COL. WHYTE'S FLIGHT.



Have made a bar, as in the engraving, of brass or white metal, cut off the tail of the fish and supply its place by the artificial screw, keeping the point upwards till it comes out of the mouth of the fish, and sewing the mouth down to one of the small holes marked in the top, to the upper one of which your line or swivel is to be attached. The flight of hooks should be attached to a small ring lying above the nose of the fish, or fastened to the line.

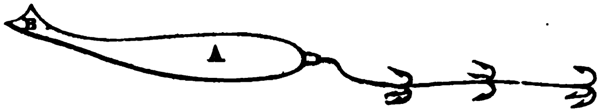
PIKE FLIGHTS.

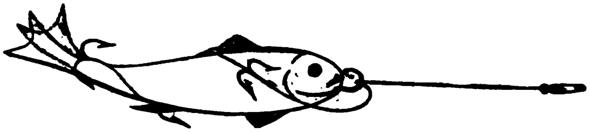
1. Use a single lip-hook and three treble hooks. Insert the lip-hook in the upper lip of the bait, the first treble behind the gill, the second near the root of the tail, giving the bait a slight turn, and let the third treble project beyond the tail; tie the bait to the gimp and put a small bullet some four inches above the head, with a swivel; two inches beyond that tie twelve inches of gimp or gut and then another swivel.

2. Another way of baiting is as follows:—Use three good-sized triangle hooks upon 12in. or 18in. of gimp, according to the character of the water to be fished. This gimp is passed through the vent of a dead fish and out of the mouth. One of the hooks may be thrust slightly into the flesh of the bait, and the points of the other two kept free. But this should only be done where the bait is tender, and liable to tear up from constant throwing. If such be the case, the mouth of the bait may be further secured by a needle and thread to the gimp itself by winding the thread around the latter once or twice, and thus the straightness of the bait is secured; this should not be done where the bait has not a tendency from its limpness to "hog-back" and bend, as the fish should have full play upon the gimp, that the pike when struck may blow it up the line, or the weeds may carry it beyond the hooks when the captive "plays" and thus leave the hooks their full freedom. The lead, either shot or pipe,

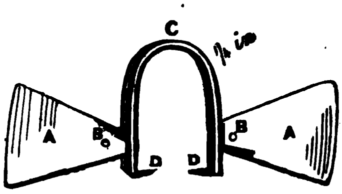
should be between the line and the gimp, hanging festoon-fashion free from the straight line. If this plan be adhered to, one or two swivels at the loop-end of the gimp will be found sufficient. As the treble hook will almost always present a greater resistance to the passage of the bait through the water upon the one side than upon the other, the bait will spin without any bending of the tail, or any other interference than the simple threading of the gimp with the baiting-needle; the velocity of its revolutions is not so great as in most other cases; but its gyrations are quite quick enough.

3. A represents the usual lead used in spinning; this, in place of being at the distance of a foot or so from the bait as is usual, is inserted into the mouth of the bait at B, and forced down till the lead is covered in the body of the fish; the flight of hooks are then bent backwards, encircling the bait as shown in the lower sketch, one hook of each two being fixed *secundum artem*; the hooks are bound upon copper wire, which being flexible prevents the chance of breaking from frequent use, and the tail end of the lead, marked B, being rather thin and flattened is easily bent to any requisite curve; the usual gimp and swivels of course being required, they are attached to the fixed ring at the head of the lead. The lower or baited flight of hooks has a double tail defined in the fish, merely to show that it can be bent to any curve required.



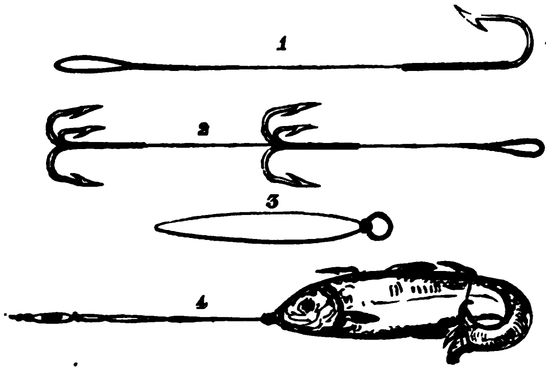


4. C. is a spring made of hard silver like the top of a pair of sugar-tongs, made to the shape of a bait's back; at D there are two small spikes or hooks of silver, made sharp, in order to penetrate slightly into the sides of your bait; AA are the fins or spinning power (regulated to taste). BB are two small holes drilled through the fans, large enough to admit of the gimp or gut of your tackle passing through. This is merely a precautionary measure, in case a pike or other fish



scraped strong enough to tear out the spikes (DD), which is almost impossible, considering your strong spring on it, and hooks lying alongside your bait. The fish, being alive, shows well in the water, and does not require so much swinging and drawing. The fish will swim of itself, and the wings will cause it to rotate, giving it the appearance of a wounded fish. Trout and perch may be taken in the same way.

5. Another flight is constructed as follows: Figs. 1, 2, and 3 represent the spinning tackle taken to pieces, and Fig. 4 the fish baited. First pass a baiting needle from the centre of the tail of the bait completely through the fish, bringing its point out of the mouth; with this pull the loop Fig. 1 as far as possible, that is, until the bait is stopped by the barb of the hook, which will give the bait the same curve as the hook; then take the loop Fig. 2, and pass from the gills into and through the mouth of the bait; then take the lead Fig. 3, and pass it into the bait; then take the loop Fig. 1, and pass it through the loops Figs. 2 and 3 twice, thus forming a knot to secure them together. After this tie the mouth of the bait with waxed white thread, as tightly as you can without cutting the mouth; then stick one of the triple hooks No. 3 into the flesh, and tie it also with white thread; then tie the tail, near the barb, in the same manner, taking care that the hooks Fig. 2 are made to lie on the *outer curve* of the bait. A gimp trace with two swivels must then be attached to the loop Fig. 1, and the flight is ready for use.



PIKE GORGE.

The following is a sketch of a spinning gorge: In Fig. 1, A represents the wings, B a piece of brass wire looped at the head, and passing under and over the wings at C; one end of the brass wire terminates in a hook at D, the other ends in a point at E. With a small piece of putty a mould is easily made. It should be larger than the exact size required, to allow for finishing. Press an oblong hole in your putty, lay your wings and wire over it, as in Fig. 1, and press them down gently till they occupy half the depth of the hole; finish the edges and mould with a penknife, and see that all is clear. Now pour on your melted lead; when cool finish to the shape of Fig. 2 with a rough flat file and sand paper, and bend the wings up and down. Fig. 3 represents a sectional view, the dotted lines the lead, the hook is to be at H. It is best not to bend up the piece of wire which forms the hook (Fig. 3, H) until after the casting is completed and rough filing done.

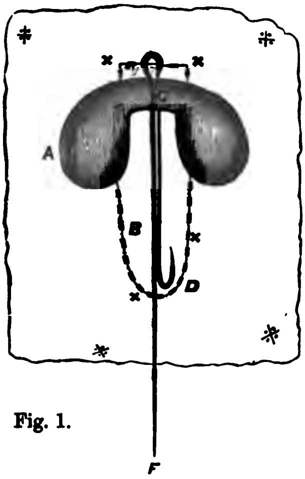


Fig. 1.

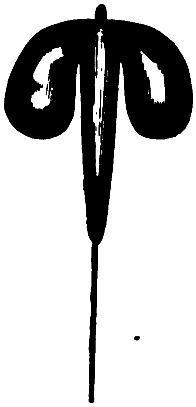


Fig. 2.

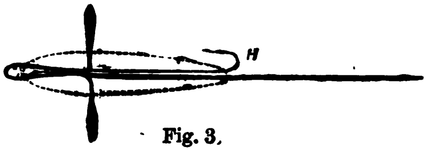


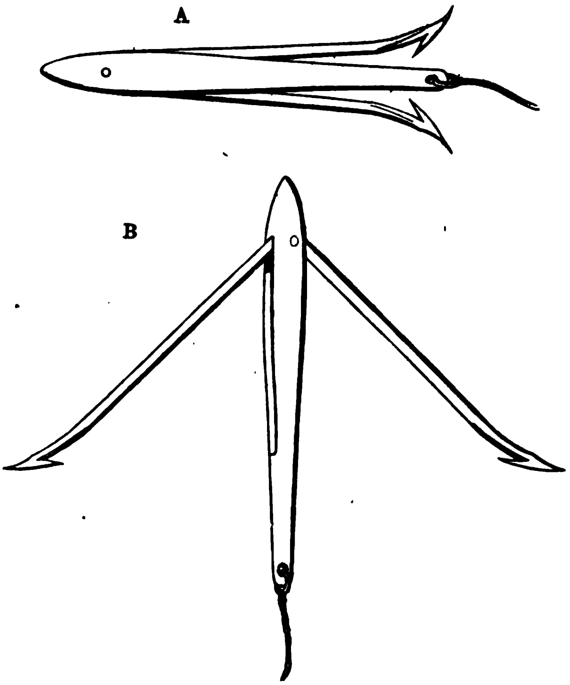
Fig. 3.

SNAP HOOK.

Tie a small triple hook on gimp, and a double hook measuring 1¼in. from point to point, so as to leave about an inch of gimp between the end of the triple hook and the curves of the double hook. To bait it, loop on the gimp to the baiting needle, and insert it in the side of the bait about an inch and a quarter from the nose, the triple hook being fastened in his tail. This flight may be varied by adding another triple hook close to the large double hook, or by doubling the tackle and having a range on both sides of the bait.

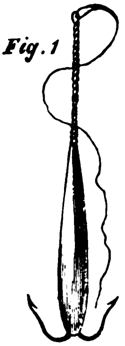
SNAP GORGE.

The snap gorge, as represented is an invention of Messrs. Farlow, Strand. To bait it make a deep transverse incision to the bone in the side, about the middle of the bait, and through this incision pass the rounded end of the brass wedge into and through the body of the fish towards the head, taking care that the barbed wings lie towards the tail. With a baiting needle pass the gimp through the body and out of the tail. The momont the fish take the bait, strike, and the hooks fly open. A represents the hook as it lies in the bait; B, the same as expanded on striking a fish.



THE OLD FASHIONED GORGE.

It is necessary to have your hooks and wires of various lengths to accommodate the various sizes of bait; and you will find it useful to prepare some half dozen of these hooks and baits before you go out trolling.



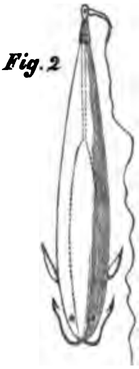
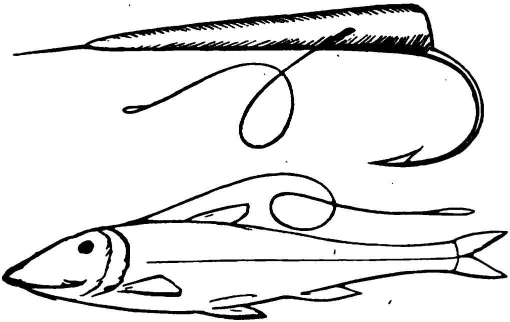


Fig. 1. Gorge-hook.
Fig. 2. Small fish—the dotted lines showing the gorge-hook within.

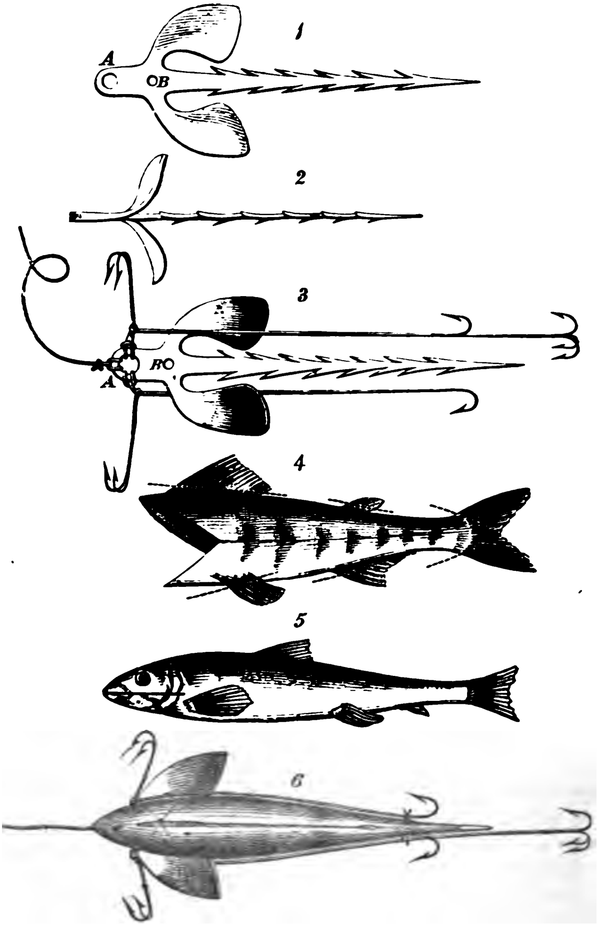
ANOTHER GORGE.



Take a salmon hook the size of that in the drawing—mould some lead upon it, taking care to keep the lead thickest near the bend of the hook. Then make a slight saw-cut on one side of the lead, opposite to the point of the hook, in which insert half a yard of fine gimp. Then, to bait the above, insert the baiting-needle into the fish's mouth, bringing it out on the shoulder, very near the back of the fish. The hook is pushed down the fish's throat, while only the bend of the hook lies out of the mouth, as represented in the drawing.

MINNOW OR PARR TAIL, SPINNING TACKLE FOR.

Take a piece of stout sheet brass or German silver and make it of the shape Fig. 1, barbing the sides of the centre pin with a sharp chisel; turn one wing up and the other down as at Fig. 2. Put on the flight of hooks as shown in Fig. 3, then take a parr's tail cut as in Fig. 4, cutting off the fins and tail as shown by the dotted lines; if a minnow is used



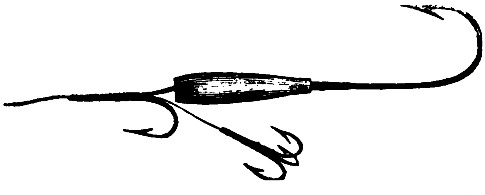
make a cut down through the gills as at Fig. 5. Put the pointed barb at the cut in the parr or at the mouth of the minnow and push it down towards the tail, covering all but the two wings. Then make the bait fast by sewing it on, passing the thread through the holes A, B, crossing them over as shown in Fig. 6. Then take the flight of hooks, lay one down on one side of the bait and the other on the other, pass a thread through the tail over the centre pin and shank of opposite hook, return it and tie it; this keeps all close and secured. Were the flight of hooks left loose they would fly out and prevent the bait from spinning. The two double hooks at the head of Figs. 3 and 6 are left loose and stand out in spinning as there shown.

MINNOW OR PARR, TO BAIT A.

Get an ordinary sized worm-hook tied on good gut; begin by inserting at the root of the tail; pass it through, and then insert it again at the side you bring it out, about one-third of the length of the fish; then put it through again as before, bringing the hook out just below the gill, passing it through the latter into the mouth, letting it lie close to the side of it, as a gorge-hook, taking care that you keep the hook on the same side of the mouth as the gill through which you put it. Draw the gut straight, and make a hitch-knot with it over the tail, and all will be right. The way to use it is to cast the bait up the stream and let it sink, following it along the bank, and when you have a run give him time, and treat him just as you would a pike with the gorge. If the current is strong, a few shots about a foot above the bait will keep it down and prevent it travelling too fast. If used for pike, gimp must be used instead of gut.

SPINNING-TACKLE FOR TROUT.

1. The trace should be 2yds. of good round gut, well tapered, with a small box-swivel in the middle, a loop at each end; a lip-hook (small), and triangle



to lie at the shoulder of the bait, a small swivel within an inch of its nose and one good-sized tail-hook, form the flight, dressed on half a length of gut. After tying on the shank-hook, have a very fine pipe lead, easily cast in chalk, of about three-quarters of an inch in length for a full-sized minnow, and not too thick, which slip on to the shank, and which traverses up to the bend of the lip hook when the bait is put on, and then passed into its belly by sliding it down the shank. Loop the fine end of the trace-line through the swivel, and the whole is complete.

2. To bait it, take the large hook (Fig. 1), and entering it in the minnow's mouth, pass it down the entire length of the minnow, and let the whole barb appear at the tail, then pass your smaller hook, which may be a sliding one, through the lips; see that your fly-hook lies straight, and your bait is ready. Tied on with larger hooks or gimp, this tackle answers for pike, but in that case the fly-hooks must not be used, as they are perpetually catching in weeds.

FIG. I.

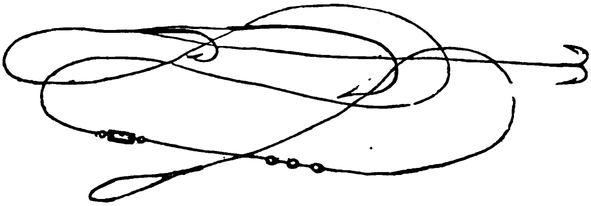
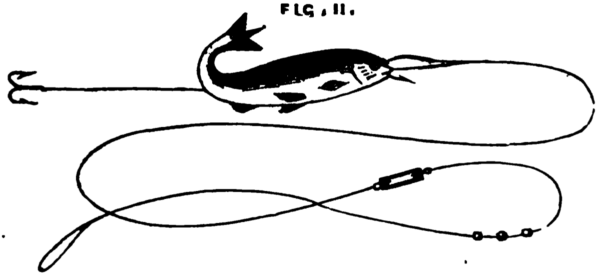


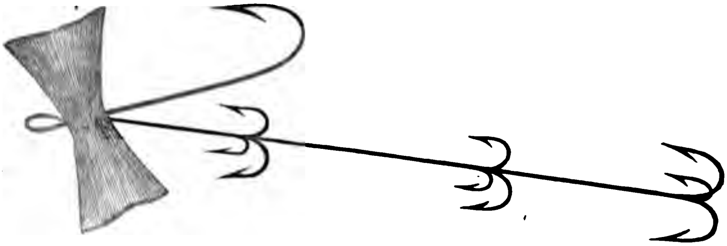
FIG. II.



3. Pass the gut of a single triangle in at the vent of the minnow and out of the mouth. Insert into the belly of the fish a piece of lead having an eyelet-hole in the top, through which run the gut. Fasten at the mouth with silk, and bend the tail by means of one of the hooks of the triangle. Some fasten a flexible brass wire through the lead, and then bend that to turn the tail.

STONE LOACH, FLIGHT FOR.

Put the hook that passes through the spinning apparatus into the fish's mouth, and fix it in his back, sewing the edges of his mouth round the top small part of the screw. A brass loop should be brazed to the hook to fix your tackle on. The fish will of course lie perfectly straight, and the flight of hooks (of which the last should be considerably the largest) should protrude about an inch behind his tail, fastened above it with a piece of red waxed silk; of the other triangles, enter one hook in the flesh, both to keep all snug and straight, and to make the others keep a proper position.



WORM TACKLE.

Take a large dead worm, pass a thin piece of copper wire from head to tail (Fig. 1), making a small loop at each end; then affix a snap composed of two small and one large treble hook (Fig. 2), and use it as any other spinning bait. It will kill well, especially in clear water.

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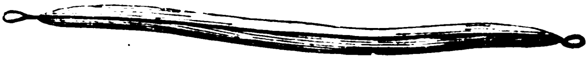

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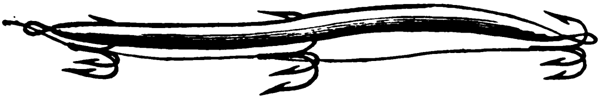


FLOATS.

THE EGLINTON.

It is intended especially for worm-fishing for trout, &c., in shallow streams. In shape it is like the half of a live-bait float, the cork being severed in the centre. This severed surface being somewhat concave, its action is to carry the worm, by the resistance the concave surface offers to the water, over many minor impediments which obstruct the free course of the bait.

THE TUMBLER.

This is made with a large swan-quill, with a short pear-shaped piece of cork at about the centre, or perhaps a little nearer the top. The line beneath is shotted to sink the bait, but not to cock or balance the float in an upright position, as in the ordinary way; but a shot or two are either inserted in the top of the quill and confined there, or a cap of metal is made to fit it, and painted of a colour discernible at a distance. This arrangement of shots upon the line at the one end of the float, and the weight upon its apex at the other, should be so managed as to permit of the float lying down upon the surface of the water. When the bait is seized, the float will be instantly drawn into an upright position, the cork acting as a fulcrum, and by this action quite one-half of the float itself is presented suddenly to the eye of the angler, at a distance probably from his rod at which the half-inch of an ordinary float would have been almost or altogether invisible.

GUT.

BRITTLE GUT.

Steep the gut in soft water for some minutes.

DRAWING, TO PREVENT.

Singe the end of the gut in a flame, cut off the burnt part, but leave the slightly enlarged opaque portion.

DYEING GUT.

The three best colours to dye gut are pale blue, green, or amber. No other colours are needful. For pale blue, warm some ink and soak the gut in it; but do not let it stay in too long, or it will contract too dark a hue. It can be stained to almost any depth of shade—to that of the ink itself indeed.

To dye gut green, boil a strip of green baize, dropping a small piece of alum in it, and then steep the gut in the warm liquor. The liquor will keep, and will serve from time to time by being warmed.

To obtain a green the colour of water-weed: Boil the gut in an alum mordant, and then in a solution of indigo mixed with sufficient turmeric to give the characteristic green colour.

Another green is given by steeping the gut in strong green tea.

For amber, use the lees of coffee or of strong tea; but the process will have to be repeated once or twice.

Or one scruple and a half of quercibion bark; 1 scruple alum; 1 scruple cream of tartar; 6 grains madder; four drops muriate of tin. Immerse three minutes. This will give a light yellow or amber.

Another amber dye is to steep a good handful of the bark of the common barberry tree in a pint of boiling water, and let it stand for a couple of hours.

For an olive, walnut-shucks steeped ; and onion peel for a yellow.

TO MAKE GUT FINE.

Steep the lengths an hour or two in a saucer containing vinegar and soft water—one part of the former to three of the latter. When sufficiently softened, take one of the thinnest lengths, make a double knot at the thinner end, screw it firmly in a table vice, and then lay hold of the other end with a pair of powerful pliers, giving a turn or two round their point for greater security. After that rub the whole length between fingers and thumb, moistened in the saucer, until a small portion of fur rises equally round the gut. This fur take off with a piece of dry linen, working principally towards the thicker end held by the pliers. Do this to equalise the thickness of the gut. Then recommence raising fresh fur and taking it off until the desired degree of fineness be obtained. Were this attempted at once, there would be danger of producing inequality. After rubbing the gut dry with the linen, pass india-rubber two or three times over it, and polish with chamois leather. All that is required is, by a kind of spinning motion, to raise the fur equally round the gut, and to avoid "dry shaving," which would leave weak parts. After each link has been sufficiently polished, place it in another saucer, containing plain water.

TWISTING GUT.

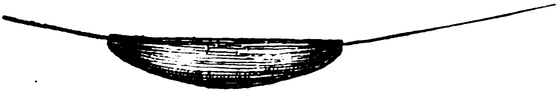
There is an instrument sold at the tackle-makers for that purpose, but a simpler and less expensive one may be fabricated from three quills of equal length, with a wooden plug in the end of each. The gut is first soaked to soften it; then take three strands, or as many as may be desired, knot the ends together, and pass each strand through a quill, and plug it in its place with the wooden plug. By twisting the quills a few times an inch or two of the gut will be twisted together; draw another inch or two through the plugs, without taking them out, and twist that likewise, and so continue until all is used up. A good twist will be produced, but not so even as with the instrument.

LINES

HAIR, STAIN FOR.

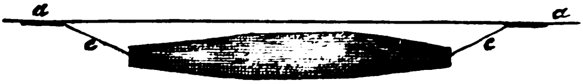
Strong coffee or ink will answer the purpose; or try a decoction of walnut leaves or logwood, as recommended for silkworm gut; boil the hair in strong tea for about a quarter of an hour.

Make a lead of the ordinary pipe fashion, but straight along one side, and with a good deep belly along the other. All that is required is *that there*



should hang more weight from the centre line on one side of the lead than on the other, so that the lead will not turn over easily. The lead of course must be plugged on to the line.

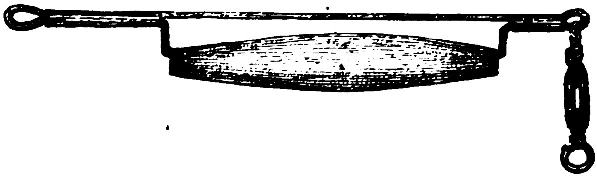
Mr. Cholmondeley Pennell's lead.—The annexed diagram shows the very simple method proposed for overcoming this obstacle.



(*a* represents the trace, *b* the lead, and *c* the gut or gimp by which the lead is affixed to the trace.)

It will be observed that the lead here, instead of resting *on* the line or trace, hangs horizontally *underneath* it. When very light leads are used, the space between the line and the lead should be proportionably increased.

The objection to gut or gimp being used for this purpose is that it soon cuts through; to obviate this Mr. Pennell has substited wire, as in the subjoined engraving.



The two ends of this wire meet about half way between the upper loop (*e.g.*, that furthest from the swivel) and the lead, on the under side, so as to give the utmost strength to the main trace; after which the spaces at each end between the loops and the lead are securely whipped. It is necessary to be particular in the size of the wire employed, in order to avoid clumsiness on the one hand and undue pliancy on the other.

Again: The old plan of taking off the trace and trailing the line two or three times across a grass-field, is probably the best that can be adopted after the enemy is once actually in the camp. This is, however, at best but a temporary expedient. Kinking may also be cured by taking off the bait and reversing the spinning side of the bait. Take a short cast first and the line will soon untwist.

LONG LINES.

The long line usually consists of fifty-two " bolts " and 890 hooks, each bolt being twenty-eight fathoms, and having about seventeen snoods from five feet to seven feet apart. These lines are employed in the capture of two classes of fish—cod, ling, and turbot representing the one, and haddock, fluke, gurnet, and whiting the other. For heavy fish these lines are set on banks, whilst those for the smaller are either shot in bays, or on the inner edge of the same banks. Cod lines are set at night and lifted in the morning, are much stronger and stouter than " the small lines," and must be baited with square morsels of eel, herring, or bucky. For haddock, a line the size of stout whipcord is employed; when set, it is allowed to fish from two to four hours, and is usually baited with lug, limpet, shrimp, and smaller morsels of fish. The snoods to which the hooks are attached should be made of twisted horsehair. The lines above described, together with their buoy-ropes and floats are usually the property of four men, each individual baiting and keeping his own share in a state of efficiency. The length to be employed depends, therefore, on the number of hands.

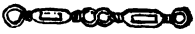
PATERNOSTERS.

Take a fine taper gut length of about three yards, and to the thin end attach a lead, and then take two hooks, and attach each of them to about four inches of gut. Tie on one of the attached hooks to the gut length, a little above the lead, and the other about ten inches higher up. The lower hook will in fishing be on or very close to the ground. Fasten the thick end of the gut to a very fine running line, and then fit the whole tackle on to a light rod having a stiffish top. Put a worm on the bottom hook, and a minnow or little gudgeon on the top hook, and you are ready for action. To use the tackle, uncoil and lay at your feet as much of your running line as you wish to throw out, and then make your cast in any direction you like. Let your paternoster lead sink to the bottom, and then draw it gently but continuously along the bottom towards you, dropping the line at your feet as you gather it in, so as to be ready for another cast. In this way you may search miles of water in a day. To work the tackle effectually you must of course have your rod in one hand, and your line in the other; your rod should be held at an angle, the point turning upwards, and the line, from the fingers which are drawing it in, to the lead at the bottom of the water, should be tight. The instant you are attacked, strike; if you do not, the fish, feeling the resistance of the tight tackle, will blow out the bait, and rush away, unless peradventure he has in his greediness hooked himself. Every fish, in this style of fishing, takes the bait furiously; and you can generally tell what fish has attacked you. A jack gives one jerk (knock is the conventional term) to the top of your rod, and then bores down with all his weight; a chub gives one knock, and rushes away; a perch gives three knocks, which follow each other with the rapidity of lightning. The best time to fish in this style is from October to March, when there are few or no weeds. In summer time, when weeds are rank, you should still use the same tackle; but if you cannot find a clear space for working it, introduce it between and by the side of weeds, holding your line tight, and drawing it up and down perpendicularly. At such a time of year, when the water is fine and low, you should vary your practice. Sometimes you will find it best to take off the top hook, and fish with one red worm on the lower hook; and sometimes it will be best to fish with both hooks, but both off the bottom. Some anglers, when they go out paternostering for perch, throw the paternoster into the water and let it remain there, and await the result; this is legering, not paternostering. Some, again, put on gimp, because they expect visits from pike; this is pike-fishing, not perch-fishing. Work the tackle properly, and all your fish will be hooked in the lip; and, when the weeds are down, a pike of 20lb. thus hooked may, with management, be killed with the tackle I have described.

The length of hook gut may be varied thus: Take about two yards of gut for the main line, with an ounce bullet at the bottom; at 9in. from the bullet loop on a No. 5 hook, tied on 6in. of good gut; about eighteen inches above this loop on another hook the same size, but on a 12-inch gut length. The lead or bone runners are quite unnecessary, but there should be a drilled shot pinched on to the main line above and below each of the hook lengths.

SWIVELS.

Mr. C. Pennell says: "With the leads arranged on the usual plan—from four to eight of these is the ordinary, and indeed necessary, complement to each tackle—and these, being distributed up and down, at a foot or so apart, make a great show and stir in the water, frighten the fish, weaken the trace, and cost money. With the lead arranged on my plan, a single double swivel, like that shown in the annexed diagram, is amply sufficient for every purpose; and the spinner is thus enabled to get a yard of clear gut between the bait and the lead.



With regard to *gimp*: a certain amount is of course necessary with jack, but I would make it as short and as fine as possible—say five inches above the lip-hook, and that painted green (which colour the lead, also, should be painted).

Thus, then, I construct my trace for jack; and the same, minus the gimp, is equally applicable to Thames trout and lake fishing. Hooks and gimp, 8in.; gut, 2¾ft.; double swivel (immediately below lead); lead; and then two or three feet of gut again between the lead and the running-line."

Some consider that two are enough for a trace; others are not satisfied with less than five or six. Unfortunately there is good reason for this, the swivels generally being of rough make and indifferent finish, and the larger number are required for the chance of getting one or two to work freely. The remedy is easy. The joint should be oiled, and some Turkey-stone-dust added. The swivel should be held by the middle, and the eye hooked on to a twisting-machine, lathe, or any contrivance that will turn it quickly. This should be done for three or four minutes, oil and dust being added when necessary. The other end should then be treated in the same manner. It will be found that a bait will spin as well with one swivel ground in this way as with three or four in the rough.

WATERPROOFING.

Dip the lines in boiled linseed oil. Extend and dress off all superfluous oil by passing it through the thumb and finger; wind it on a reel, and repeat the dressing twice or thrice within a fortnight's interval. Three weeks after the last dressing apply some mutton suet, by passing the extended line between the fingers which hold a piece of raw mutton suet The friction will melt the fat sufficiently to cause it to adhere to the line, which must afterwards be rubbed down with flannel.

Again, pulverise one pound of catechu, and boil it in a gallon of water until thoroughly dissolved, then pour it over the lines in a tub or pan, and let them soak twenty-four hours. By adopting the plan of placing the lines in a separate vessel, you will avoid all risk of scorching any portion of them, which may happen by the line touching the side of the vessel if it should not be quite full.

Again: Take half-a-pint of equal parts of boiled oil and gold-size, and dissolve therein a piece of resin about the size of a big walnut; steep the line well for six hours. Rub off the superfluous varnish carefully and hang out to dry; when quite dry repeat the operation.

Or, take of boiled linseed oil 1 pint; beeswax, ¼lb.; and melt the wax in the oil, in what chemists call a water bath, to prevent the lines being burnt which oil at the boiling point will do. When well soaked, wind them on a wooden frame, stripping them between the forefinger and thumb; hang them up in a dry, airy place, preventing their touching anything until quite dry, and they will last for years. At the close of each season dip the end of the line that has been most in the water in the mixture, and the line will be as fresh as ever.

Another: Half a pint of boiled linseed oil, a piece of beeswax about the size of a walnut, twice the quantity of Burgundy pitch, and a tablespoonful of best copal varnish. The line must be immersed when the composition is just liquid enough to penetrate; if too hot, it destroys the texture. It should, after a few minutes, be taken out and left to drain. Take it where there is space enough to stretch it to its utmost tension, and clear from the superabundance by passing paper or linen along it several times. If left until the outside seems dry, it may be coiled up and hung in any place exposed to sun and wind until the interior attains the same consistency. It will be found necessary to tighten it on the second day. It is needful every season slightly to renew the dressing, which may be done (at the end only which has been in use) by a brush, the composition outside only having been washed off. It is better to leave the line extended until quite dry, if it can be placed in safety.

Again: After the line is thoroughly dried, it should be steeped in gold size and then dried, after which it may be steeped again. After it has been steeped the second time, before drying, it must be rubbed with a clean linen cloth, to prevent its being knotty. After the second drying, it must be steeped in a solution of india-rubber, which must also be dried. The line must then be steeped again in the india-rubber solution, and rubbed with the cloth as before, and dried. Before using, it must be rubbed with palm oil, with which, also, from time to time before using, it may be rubbed. A very small quantity must be employed, and not too often. No other oil must be used, as it is possible any other may tend to rot the silk.

Likewise: One-quarter ounce of beeswax, half a pint boiled oil, quarter of a pint gold size, boiled up; the lines well steeped until cold, then stretched out at full length, and cleansed through a dry flannel or linen rag.

Dressing a line with gold-size in too great a quantity renders the line brittle, and also causes it to rot. Some silks absorb a larger amount of gold-size than others, while some descriptions, on the other hand, will absorb more oil; it is therefore advisable to experimentalise with a small portion (say a foot) of the line you are about to dress, using the oil and gold-size in the proportions recommended. After this piece is dried and well rubbed down, it is easy to discern whether more oil or a further quantity of gold-size is required.

Another method is by soaking the line, before it has been wetted, in a mixture containing equal parts by measure of copal varnish and boiled linseed oil, and hanging it in the air, not in a coil, but at length. When nearly dry, which will be about the third day, it should be well rubbed with a coarse cloth, to remove all stickiness and to give it a smooth surface. One ounce of the mixture is sufficient for a line of sixty or eighty yards.

In addition to the above we add the following: It is done with two-thirds of boiled oil, and one-third of oak-varnish, steeped three days, taken out for a fortnight, and then steeped three days more, after which stretch upon a frame to dry and harden for three or four months.

Stockholm tar makes a good waterproofing, if proper care be taken. After soaking in the tar a short time, be very particular to rub the line well down before hanging it up to dry, and while drying it cannot be served too often in this way. Do not use it before it is thoroughly dried.

The next two recipes are very good.

No. 1.—One pint boiled linseed oil, a wine-glass and a half of copal varnish; if you want a very stiff line, add a wine-glass of gold-size.

Mix all in a marmalade or other pot, and place in an oven till more than lukewarm, but not too hot; remove them and coil your line carefully into the pot, in such a way as it shall draw out easily. Let all stand by for a night, and next day draw out your line between the forefinger and thumb, pressing pretty hard to remove superfluous oil; the line must then be hung up to dry either in an airy room, or, if the weather is very fine, out of doors. No part of the line must touch another. Let the line hang for a week, and then repeat mixture and dressing as before. Let the line now hang for a fortnight, and then dress once more in the same way, but leaving a little more oil on (this is done by letting the line slip more easily through the fingers); the line must now finally hang to dry for a month at least.

No. 2.—This is an india-rubber dressing, and the only one which will be found free from stickiness. The very dark shade it imparts to the line makes it objectionable; however, as a dressing for fishing or shooting boots, it cannot be surpassed. Get a flask of Lucca or salad oil, a piece of pure (not vulcanized) india-rubber, the size of two walnuts; cut the india-rubber into the smallest shreds you can, and put them together with oil in a tinned saucepan; cover, and place in an oven. It will take from a week to fourteen days for the rubber to be thoroughly dissolved, and during this time the saucepan must be kept constantly in the oven, and examined frequently; when all is well amalgamated, it should have the consistency and somewhat the appearance of treacle; and this must be attained by adding oil or rubber, as it may be too thick or too thin. This dressing is to be used in every respect as No. 1; but as, when the line has hung a considerable time after the third dressing, it will be found rather limp and slightly sticky, it must be passed through gold-size, and left a short time to dry. This hardens and stiffens it, and, though the gold size will wear off in time, the line will remain all right.

Again; Cut india-rubber into small pieces, and put it into a bottle with spirits of turpentine or wine, and shake the bottle every day until the rubber is dissolved; then soak the line in it until saturated.

For a plaited-flax or hemp line the following is good: The coil of line is put into a strongish glue—say half a pound of glue to a trifle more than a half-pint of water—and boiled for about twenty minutes or so, that it may be well saturated; then it is taken out, and either laid out on a dry grass-plat (no two parts being allowed to touch) or coiled round something (such as a hat-box which has previously been well rubbed with powdered chalk), and when dry, which it will be in three or four hours, recoiled round the hand and put into a boiling solution of catechu—half a pound of catechu to about one pint of water—to be kept boiling for about three-quarters to one hour; then taken out and hung up to cool for about a quarter of an hour; then well washed in cold water, to clear it of the superfluous catechu adhering to it. The coil, when put into the glue, should be tied round in places with string, which can be easily cut off; otherwise the shrinking in the glue will lead to hopeless tangle, and perhaps it cannot be cleared before the glue is set; and also note that, unless the catechu be in full boil when the glued line is put in, the glue will be extracted instead of being set in the line.

Again, hang up the line at full length in a walled garden, or any other place safe from injury out of doors; take a cup of linseed oil, and, with a small soft sponge, oil the line from end to end, rubbing the oil well into the line, leaving it clean and firm outside. When oiled, allow the line to remain, regardless of weather, day and night, until quite dry; then repeat the process, and repeat it again and again until the line is perfectly well oiled, hard, and dry; but you must never put on an additional coat of oil until the previous one be perfectly dry.

Place bits of indiarubber in linseed oil, in a brown earthenware porringer or pot, heat it gently on the fire, and stir it until dissolved. The line should then be stretched out of doors, in dry weather, between two trees or posts, and the mixture rubbed along the line backwards and forwards with a piece of sponge until well coated and incorporated, and evenly spread, and then left until dry; or the line may be coiled up and placed in the liquid and boiled very carefully; then taken out, stretched as above, and a bit of cloth passed along, so as to equalise the varnish, and left to thoroughly dry. Or, the dressing may be put on thus: put a small staple in the bottom of a wooden egg-cup, through which the line runs, taking care to keep the cup full, so that no air-bubbles collect, which they are sure to do if the quantity of fluid gets near the bottom.

Again, 1 pint of Baltic linseed oil, 3oz. whitest indiarubber, ¼oz. beeswax, 1 tablespoonful gold size. Cut the indiarubber into very thin slices, and dissolve it in the oil at about simmering heat, or rather higher so that it does not boil over, then add the wax. The line to be soaked for a few hours, keeping the liquid at about tepid heat, and then drawn tightly through the finger and thumb to express all superfluous liquid, and then stretched to dry. Or, 1 pint linseed oil reduced to half its weight by boiling, a little camphor, and a gill of copal varnish.

Great caution is required in using all the above recipes in which boiled linseed oil forms a component part, since, for some cause or other, the beiled oil is sometimes apt to burn the line.

MISCELLANEOUS.

BARRIER TO PREVENT THE PASSAGE OF FISH.

Place in your stream, well fitted to the bottom, a grating close enough to prevent the passage of fish; but, instead of placing that grating in an upright position, a foot or more above the highest water, slant the grating down stream, so that the top of it shall be an inch or so only above the highest level. This will not catch the *débris* driven down by floods, for from its slant, all is washed over it, and it will occasion no flooding in higher sites, but it *will stop the fish.*

BOAT FOR SEA FISHING AND SHOOTING.

"The best-sized craft for sea fishing and shooting combined," says Mr. Wilcocks, "is a yawl, or dandy, fifteen tons, carvel-built, length about 40ft., beam 12ft., not to draw more than 5½ft. or 6ft. at the utmost. A boat of this size will give a good sized forecastle for the crew, consisting of a man and boy, a comfortable saloon cabin for the owner and his friends, and a fair-sized well, in which to stand and fish, into the coamings of which a wink must ship, for heaving in the cable or warp—which wink can, when not in use, be stowed away in the wings of the vessel. Choose the stern with a transom, not with a counter, which is often much in the way in mackerel fishing or in whiting catching. The boom for the mainsail should not be a fixture, but detachable at pleasure, and will not often be required, except when running before the wind. The mainsheet should work on a galvanised horse, as by this arrangement the mainsail, when unhooked from the sheet block, can be furled forward on the mast, leaving the well clear for hand-line fishing at anchor. The length of the vessel should be divided into three portions, the well rather the longer of the three, so that there may be plenty of room to work, and to stow a 12-foot dingy of good beam, carrying her floor well fore and aft, for the sake of stiffness, so that she may carry half a dozen people safely, and be useful to fish out of in positions inaccessible to the yacht. The cabin sole or flooring, should, by the aid of moulded ballast cast with shoulders to rest on the timbers, be thrown as low as possible, to give head room under the hatch; but in the well the platform should be raised high enough to stand and fish conveniently, for which purpose the edge of the coaming should reach about breast high; width of the side-deck about 20in. or 2ft. at the utmost, for convenience of swinging hook-and-line fish on board. If the boat is fitted with a double platform, it will be a great convenience for stowing away gear underneath, and some water-tight fish-boxes, to allow of no slime finding its way below. A good-sized water-tank should be fixed in the run of the vessel, and, if fitted with a pipe, with a tap opening into or just outside the cabin, it would be found a great convenience. The height of the coamings may be half that of the hatch, and shifting strakes, being provided, can be shipped on these to the level of the cabin top, on which additional hatches being placed with a waterproof cover, the craft may be entirely covered in for bad weather, or locked up if required like a box."

Portable punt.—It weighs about 70lb.; not more than a man can carry on his back; is oblong in shape, to stow away better in railroad carriage, and to pack clothes, tackle, &c., in; is made of tin in three pieces; length of centre 3ft. 9in., width of ditto 1ft. 7in., depth of ditto 1ft. 3in. end view.

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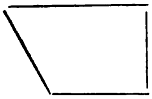

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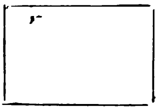

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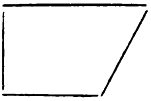
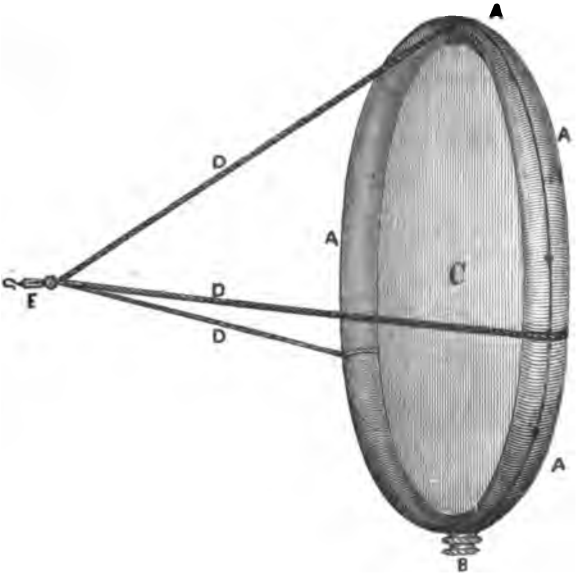


1 packs into 3, being as nearly as possible the same size as it, and both (3 being all but as wide at top as) pack into centre 2; the whole, when put together, are lashed together with rope, or bolted with nuts and screws.

CLEARING FLOAT.

Mr. Hinton's method.—Provided with an implement of this kind, in case of "a foul" you would only have to inflate your clearing-float, put your line into the hooked swivel, pay out line, and let the float run down stream until it gets a few yards below the difficulty; direct the point of your rod alternately (and slowly) from side to side, which, with the action of the current, will cause the float to traverse across stream for several yards; and by a few slight tugs (effected by suddenly slacking a couple of yards of line), you would find the difficulty overcome and the line clear.

A, A, A, A, a ring of indiarubber tubing, rendered stiff by a jointed wire, divided into lengths of 3 inches, fastened to its circumference. B, weighted screw valve for inflating tube. C, diaphragm of sheet rubber stretched across the ring of tubing. D, D, D, three short lines fastened at equal distances to the ring, and meeting at their outer ends at E, where is placed a hooked swivel. Diameter of tubing 1in. Total diameter of float 6in.



N.B. The weighted valve causes the float to assume a perpendicular position, and thus to present its broad surface to the action of the stream. When not inflated the float may be folded up, and take up no more space in the pocket than a pair of gloves.

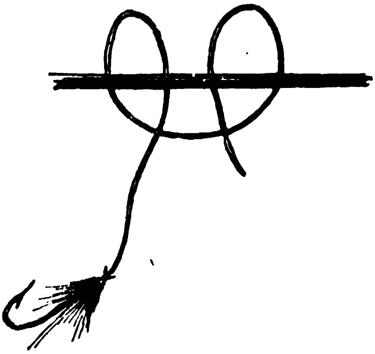
Instead of the hook E, a small spring swivel may be used, to avoid any chance of the float becoming unhooked from the line.

A leaded cork-float answers the purpose if the up-stream surface is made concave; or an empty bottle tightly corked; but the resistance in this case is very slight, and the bottle is apt to roll in the water and twist the line. A small, shallow, wooden box, with the open side turned up stream, would answer very well.

DROP-FLIES, FASTENING OF.

Make a single knot in the gut of the dropper, a little further from the fly than the intended length of drop; cut off the rest of the gut close to the knot, and then tie on the drop-fly above a knot of the casting line, with a single knot, drawn so as to bring the knot at the end close up to the line. The fly can always be taken off by cutting or biting off the knot at the end of the drop, and giving a slight pull against the direction of the knot. Very little is thus taken from the length at each change, and if the fly has not taken fish it can often be untied without cutting off the knot at the end.

Again, a slip-loop is made in the casting-line, and the end of the dropper with a knot at the point is pushed through the loop and the loop



drawn home. If the line could be relied on to stand it, it is perhaps as neat as any; or the dropper may be fastened on by a clove hitch.

FISH, MARKING OF.

Have a series of labels, either of gutta-percha or zinc, of small size; have one series circular, one oval, one square, one triangular, one oblong, and so on. Then by a system of punching of holes and cutting of nicks, you can establish a considerable variety, and the identification of every fish can be established at a glance. These can be registered, with the weight, date, &c., against them in a book kept for the purpose. The method of fastening should be a small piece of fine silver wire, pushed through the dorsal fin near the root of the largest spine, and then twisted tightly to secure it but in a loose ring, so as not to cut into the flesh as the fish grows. By using a set of labels of gutta-percha, and one of zinc, you can double the number of labels if needful.

FISH, PACKING OF.

Nothing preserves their bloom like sting-nettles; dry straw is the next best thing: but do not use *damp* grass, hay, or rushes. The following is said to be an excellent recipe for keeping fish fresh in hot weather :—Take some bread crumbs and a sufficient quantity of proof spirits of wine to form them into a paste, with which fill the mouth and gills of the fish before packing.

GIMP, STAINING OF.

Put your gimp into a little box of card paper, or what not, cover it with some flowers of sulphur, put it aside, and in a day or two it will be as black as you can desire. If you cannot wait a day or two, but must have it at once, get a little sulphur in the soluble state, viz., sulphide of ammonium, formerly hydrosulphuret of ammonia. Put a few drops of this into water, and immerse your gimp. A few hours will make it black enough, without in the slightest degree injuring the silk within.

GOLD LEAF VARNISH.

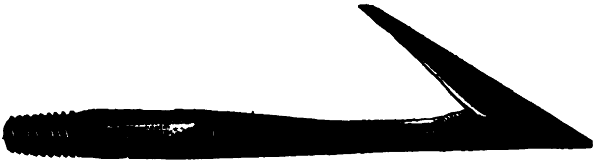
The best way to renew the gilding on bait is to get some Dutch leaf varnish; those parts of the bait required to be gilt, lay the leaf on. When dry wipe off the superfluous leaf, varnish over the leaf a couple of coats, and you will find the bait serviceable.

GRAPNELS FOR DEEP-SEA FISHING.

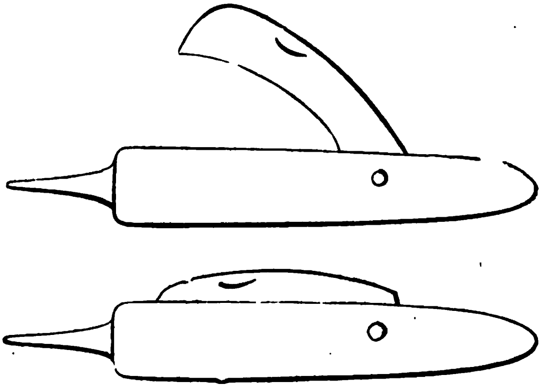
On account of the strength of the tidal currents in the offing of Dartmouth and Start Bay, South Devon, the fisherman of this locality have substituted grapnels (*vulgo* creepers) for lead sinkers; these grapnels have fire arms, are about eighteen inches in length, and are provided with a conical piece of lead of two pounds weight, cast on to the ring-end of the shank, as close to the eye as possible, that the ring end may not rise from the bottom by the strength of the tide, and thereby break out of the ground. A thimble of the kind used by sailmakers to insert in the bolt-rope of sails, is closed upon the ring, and a stout piece of wire, a quarter of an inch in diameter and two feet in length, is slung to this thimble by passing the end of a piece of cod-line through the ring round the circumference of the thimble, and lashing the ends of this piece of cod-line each to an end of the piece of wire. The wire now hangs from the ring, as a topsail yard of a square-rigged ship; and the fishing-line being attached to one end of the wire, the snood, with the hooks (amounting sometimes to ten or a dozen), is attached to the other. The weight of the grapnel, complete, is from seven to eight pounds; and sinkers of nearly double the weight would be requisite if this grapnel arrangement had not been adopted. It is, perhaps, needless to observe that these grapnels are not intended for use on any but well-known clean ground; that is to say, free from rocks.

FLY RETRIEVER.

It consists of a small flat hook, about double the size of the sketch. This hook screws into the same socket as the landing net, the handle of which is made up of two pieces connected by a hinge, and rendered firm when used by a piece of stout tin dropping over the hinge after the manner of a lady's parasol: the length of the handle when extended being six or seven feet—when not in use it doubles back, and is half that length. When about to use the fly retriever, detach the net, and screw in the retriever, by which means you can reach a bough twelve or thirteen feet from the ground, and nine feet if in a horizontal direction from where you stand; the inside of the hook has two sharp edges that meet at an acute angle, and securing the branch above the fly, a smart jerk brings the whole to the ground. The hook-end of the "retriever" is not in the same plane as the screw, but is slightly bent, by which means it is easier to get hold of the offending branch. Any blacksmith can make the hook.



Or again, the following, which is easily made: two pieces of flat iron joined together at both ends, with sufficient room between for the blade, which is only allowed to open half way, as in the sketch.



GRUBS IN FLY-BOOKS, TO PREVENT.

To prevent these pests getting into fly-books. or portfolios of feathers, &c., drop in occasionally a few drops of impure naptha. If the fly-book be made of flannel, then take out the flannel leaves and bake them in a spent oven, taking care not to scorch the flannel. Powdered camphor scattered over the leaves will prevent them from coming again. Lavender flowers kept in the pockets are also a deterrent. In books where there are some flannel leaves the moth can be kept out by soaking the flannel in a solution of corrosive sublimate, and afterwards drying it well. Indeed, the flannel in all books should be thus prepared. Benzole is also a good preventive.

LIVE FISH CARRIER, A.

The apparatus consists of a zinc cylinder, about three feet high and two feet diameter, with a strong iron handle running round the middle. To the top a small force pump is attached, and by this fresh air is forced through a star-shaped distributor at the bottom of the cylinder. A ring-net to bring the fish up for inspection, and a loose concave rim, to prevent splashing over, completes it.

LONG LINE, TO LAY.

Get from three hundred to four hundred yards of strong water cord, with hooks at every yard, baited with whelk, fish, worms, &c. First sink one extremity with a heavy stone, and then pay out the line gently to the other end of the line, which is also to be sunk with a large stone, attach a line with a floating buoy, the long line should be laid at the last of the ebb and hauled at about a quarter flood.

MARINE GLUE, HOW TO USE, AND FOR WHAT.

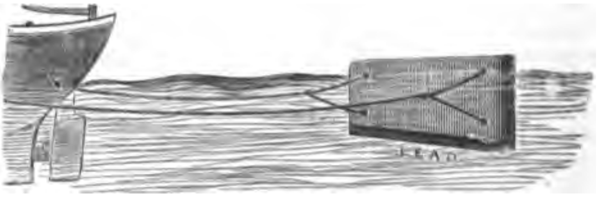
Marine glue is readily dissolved in the ordinary spirit of wine, which can be obtained at any chemist's. According to the use to which it may be applied, it may be dissolved in any proportions; and a thin solution may be made when required for the purpose of varnish, a thick solution when it is desirable to use it as glue. The marine glue should be cut into small pieces the size of a pea, and placed, in sufficient spirit of wine to cover it, in a warm spot for twenty-four hours. As regards its use for fishing tackle, it makes an excellent glue for splicing, and for binding silks of all kinds; and, when diluted with more spirit, an admirable varnish for almost any purpose where resistance to water is required—as varnishing rods, binding of hooks, dressing for fishing lines.

Another method is to put the poker in the fire, and, when hot, apply the glue to it, and then, while the glue is bubbling, put the two pieces of the rod to be joined to it. The pieces should be previously warmed.

Again : Put it by itself into the inner part of an ordinary glue-pot, and fill the space between that and the outer part with oil—water does not communicate sufficient heat. The parts to which it is to applied should, if possible, be previously slightly warmed.

It is very necessary that there should be a hole or two out through the stern peats for the purpose of putting the butt of the rod in, so that it may stand upright. It is most important when your attention is divided between scull and rod. In trolling or spinning be very careful how you try to handle your bait, if foul under water, and within reach of your hand; the least movement causes the boat to move, and, should the hook catch your finger, take care. Everyone who intends starting an a lough fishing expedition should provide himself with a piece of half-inch rope from fifteen to twenty-five yards in length, for the following purposes: Say you arrive at the lake and find that the boat is at the lee side, and a strong breeze is blowing dead in your teeth, so that you see you will have to row at least a mile before you can begin, and have any space to drift in. Proceed thus—make the rope fast to the ring in the bow, ship the rudder, and tie the helm over toward the side you intend walking along; this will cause the boat to tow along parallel with you. Should there be no rudder, then make the rope fast to the boat abreast of the foremost bench, and it will answer the same purpose, on the same principle on which an otter is fitted. Surmising that everything has gone on as desired, and that you may venture to strike out into the lake, look out for a big stone and sling it at the end.of the rope, not forgetting to make fast the other end in the boat. When you are out, and before setting to work, let the stone drop down over the bows, using your own judgment whether to let it touch the bottom or not if the water is shallow, according to the force of the wind, so that the boat may drift slowly. If the water is very deep, the length of line and weight of the stone will keep the boat's head to wind, which will enable you to fish from the stern, and the boat, will drift about one quarter the rate she would were there no rope or stone attached, giving you room and time to fish.

Or, adopt the following plan: Get a flat board 1ft. in depth and 2½ft. in length, leaded longwise on one side (just enough to keep the board perpendicular without sinking the upper side much below the surface); this will stay the drift of any boat in an ordinary lake gale. A loop at each end, pas-



sing through holes at top and bottom, and a stout string from each loop to each side of the stern or bow, will not only stay the boat's drift, but, by shortening one line or the other, if attached to the stern, the boat may be made to tack, as if under the influence of a rudder. If there be two rods, and you want to keep the boat broadside to the wind, tie the lines head and stern. Unship the rudder in all cases. There is no need to carry a board on your fishing excursions. A rough board can be found at any cottage. A nail-passer, suitable screws, and three or four pieces of lead, drilled at each end for the screws, are all that need be carried. If the fishing ground be far from houses, and it be necessary to carry a board, it matters not how light it is. In the absence of lead, stones of suitable weight may be slung close to the bottom of the board. The line from the boat should not be longer than the rod can reach well beyond, so as to enable the angler to keep his line clear of the board and lines, in case of a fish running under the boat.

As an improvement on the above, a light frame covered with strong canvas, or some similar material, might be made even more portable than a folding board. The top of the frame might be made of a piece of light wood, and the bottom and side pieces of iron; it would then float in a perpendicular position without being weighted with lead or stones, the iron rod forming the bottom, and the two side pieces should be fastened together by hinges, similar to those in a folding landing net. On the top of the side pieces a screw must be formed to allow a nut to be screwed on, and a slight shoulder formed below to prevent the side pieces passing too far through the holes, which must be made at either end of the wooden top to receive them after the frame is formed by passing the ends through the holes; the nuts must be screwed on, when the frame will be quite rigid. By taking off the wooden top, and folding the side pieces down, the whole thing might be wrapped up in the canvas, and would occupy very little room among an angler's traps.

Always make the oars fast by a piece of cord, so that if you are rowing and trolling, and a run comes, you can drop the oars and seize your rod in time, without having the trouble and loss of time of unshipping the oars. Do not forget to back water to stop the boat, for the jerk of the fish turning, as a fish always does in seizing the bait, and the boat going the opposite way, may endanger the tackle. Be particular that the line does not lie between the rod and the gunwale of the boat; it is a good plan to lay a small stone on the line and have some slack off the reel, or cut a small slice in the gunwale with your knife, and place the line in sufficiently for a run to pull it out.

Always provide yourself with a box, such as a small cigar-box, to put your knife, pipe, tackle, &c., in. You can always put your hand on them when wanted. Wear leather leggings or boots up to the knee, like the

Field boot, as, if you get a whopper into a small boat, he will kick and tumble till he sticks some of the hooks into your trowsers or worsted stockings. If your fish bolts under the bottom of the boat, be careful to try and keep him down with the point, as if there are any splinters on the keel you are very likely to lose him by the gut or line catching.

If you are fishing in a light boat and she leaks, land occasionally and take the plug out to let the water run out; be careful how you put it in again, and be particular as to the exact spot it is in, so that you can find it out when obscured by the dirty water. It should always be of cork, as if it comes out it will then be found floating in the boat. If there is no plughole in the boat, turn her up on her side and pour the water out.

NATURAL FLY, FISHING WITH.

In casting the natural fly the great thing is to avoid roughness, or any cracking of the hook behind, as is sometimes done with the artificial, but which with the natural fly at once cuts the bait off the hook. Have a 12ft. or 13ft. rod, made very light, and rather more pliable than ordinary fly rods, having the rings large and close together; it makes the rod bend more equally, and the line runs more freely. Get the best tapered line (silk and horsehair), very light; get two lengths of strong gut, and splice them to your reel line, tapering them down to your casting line, which should be at the very least 8½ft. or 9ft. long, of the finest gut that can be got, the hook a No. 8, fine in the wire and of exceptional temper, so as not to over-weight the fly. Put the hook through the thorax of the bait; let out as much line as you find by experience you can cast. Take the line well above the baited hook, between the left finger and thumb, for the first cast; let the line hang down from the point in a bag or curve, then wave the point of the rod gently backwards and forwards until you get the line on the stretch, when make your cast, releasing the line at the same moment. Let the fly and as much of the line as is required rest on the top of the water; cast as much up stream as possible, and, as the fly comes down towards you, steadily raise the point, but take care not to put any drag on the fly. Let the fly travel on as far as it will go, without check; when it can be allowed to go no further it must be fetched off the water as lightly and smoothly and with as little wetting as possible; a semi-circular sweep of the rod point must be taken, to avoid popping, and a smooth cast up stream once more made. When the fly has been drowned two or three times without getting a rise, it will no longer float, and a fresh one must be put on. Some anglers use two flies on the same hook, alleging that they float better, and are more attractive. A very little wind, and that at your back, is desirable. Mind particularly to keep wet the length of gut which your hook is fastened to, by drawing it through your lips before making your cast, so that there is no dry gut on the surface. A very great deal depends on striking your fish. When a fish rises at your fly, suffer him to take it well before striking. Dibbing or dapping with the natural fly requires great patience, especially in very wooded situations. Get three No. 1 Kendal hooks brazed neatly together—*not bright* ones—and tie them on to the finest gut, using generally about two feet of gut. This being done, with a good supply of flies, proceed to your selected place with the greatest caution on your knees. When you see or hear a chop you may then begin. Now the greatest care must be taken when the fish is hooked in having your line all free, so that you may let go with your little finger in a moment, or you are smashed. There is no occasion to strike your fish; and remember that not any part of the gut touches the water, but your fly only; and when you see the fish coming towards you, keep your fly as still as you possibly can. To be truly successful it is well to make a mental note of every hole containing a good fish, so that when you commence fishing there may be no loss of time in selecting a spot.

OIL USED IN SEA FISHING.

The Maltese fishermen make great use of a little oil sprinkled on the surface of the water, to render it smooth when they wish to see the bottom clearly for the purpose of introducing baited hooks into holes and crevices, the haunts of large spotted congers. They also haul up, by means of instruments called clamps, large stones from the depth of twenty or thirty feet, for the sake of the shellfish attached to them; and in this case the oil is an immense assistance, for the bottom must be seen pretty clearly in order to fix the clamps properly.

OTTERS, TO DESTROY.

Discover first the landing-place, which is easily done by the flattened appearance of the soft ground or the otter's footmarks on the sand. Choose the most frequented of these, place a strong trap, firmly secured by a chain, both completely hidden (but not under water). When this is done, the hidden trap and all footmarks must be carefully washed or sprinkled over, by dipping a piece of common broom or a branch of any sort in the water; and to prevent any smell, the trap should be set some hours before the otter is on the move. To shoot otters, the landing place must be whitewashed for several feet around; by this means the dark body of the otter is clearly seen crawling over the white spot, and is easily shot with a charge of BB or swan shot.

Again: Go along the stream; look for the deepest holes where the fish are sure to fly when pursued. You will see the tracks where the otter comes out of the water up the bank, and often you will find a small tuft of grass greener than the rest; open this and you will find the dung of the otter, full of scales and bones of fish. Having found out a favourite landing-place, make a run, slanting from the water up the bank, with a trapping-paddle; dig out a place exactly the form of the trap; set the trap slanting so that the otter should not tread on the spring; cover it over with fine mould level with the ground. When done, go back as far as you can, and with your hand throw water on the place where the trap is set and all round, to take away the scent of your hand and the fresh mould. Have a chain to the trap three yards long, fastened to the bank by a strong peg, which chain you must also cover. Your trap should be larger and stronger than the usual rabbit trap.

On the banks of the lochs and rivers which he frequents, he has always a place to which he resorts once a day; this is either a stone or the root of a tree; but if neither of these be at hand, he scrapes up the sand or gravel into a small mound. It is easy to know his marks, as his dung is full of fishbones. Traps should be set all round, a twenty-feet cord tied to each, with a cork or piece of wood attached; the traps never to be fastened, otherwise the otter may pull out his leg, from its being so smooth, thick, and short. The moment he is caught, he waddles to the water with the trap, which sinks and drowns him, the line and float showing where. It is also an excellent plan to look for the place where he lands, and plant a trap just under water. As soon as he strikes for ground, he is caught by the fore feet. The trap needs no covering but the water, and is never suspected.

Their prints are easily seen on the sides of any pool or lake, or its islands, which they constantly frequent. By tying a live fish through the jaw at the water's edge, in a shallow, and by placing a *cordon* or row of steel traps near the fish, but out of its range, lest it spring them, you would be nearly sure to take the otter. But the traps must be pegged just under water for concealment, as well as for taking away all scent of your hands and feet.

OTTER, TO MAKE AN.

Take a piece of American pine or any other light kind of wood; let it be 20in. long, 8in. wide, and ¾in. thick; feather it off on one edge to three-eighths of an inch; and on the other edge cut away the two corners, and round them, so as to give each end the profile as it were of the bow of a boat, sharpening them off to cut more easily through the water; and then, by way of keel, fasten with screws on this now shortened thick edge a piece of lead sufficiently heavy to float the board edgwise with the feathered edge three-quarters of an inch or so above water. Now bore four holes through the board, at the four angles of a parallelogram, or oblong square, say of twelve inches by five; give two or three coats of varnish;

and, as far as the woodwork is concerned, your otter is finished. It may be made with a folding joint in the middle, to make it pack easily in your creel or bag. Take a piece of string, and pass each end through one of the pairs of holes; tie at each end of the string a good-sized knot, so as to prevent its slipping through the holes. Do the like with the other pair of holes; and let the two strings hang in loops of such length, that when drawn together they may meet at the centre of the board, and touch each other. Connect these two loops by a piece of brass wire, an eighth of an inch thick, and 3in. long, upon which piece of wire have a sliding ring. This is called the bridle; it should bo so made, that when you hold the otter horizontally the bridle should fall like the strings on the belly of a paper kite, only that the strings are attached in four places instead of two. To work the otter you fasten a string to the sliding ring; this string must be long and strong. If you want your otter to travel in a given direction, slide the ring to that end of the bit of the bridle, and put your otter into the water, either loch or river, and pull the string; the bridle will fall into position, and the otter go sliding out like a kite; and if your otter be a large one, and your string long enough and strong enough, there is not much limit to the distance you may let it out. If you want to go back again in the opposite direction, you have only to slide the ring to the other end of the bit. The strings of the bridle which are attached to the lower edge of the otter must be a trifle longer than the upper ones, for, should the upper ones be the least bit the longer, your otter will dive to the bottom.

SALMON FLIES, FASTENING TO CASTING LINES.

Tie a single slip-knot on a piece of suitably fine gut so as to form a sliding or slipping noose; pass the noose through the eye of the gut, loop on the fly, then pass the noose carefully over the top of the fly and round it, and so as to avoid catching or injuring any of the feathers of the fly, and draw the noose tight through the gut loop on the fly, working the slip-knot down as the noose diminishes until the operation is completed by completely closing it, the knot being close up to the head of the loop. The gut should be fine and round, and well soaked before using.

Again: Take a link of gut, about one foot in length, or longer, with a loop at one end to fasten it to the casting line; put a single knot at the other end; make a loop just below the knot, and run it through the loop on the fly; then take the other loop and insert it in the temporary loop and draw it tight, when there will be little unsightliness. About thirteen inches would be quite enough for one link of gut to use with the fly.

SEA FISHING.

Mr. Wilcocks says: " The greater portion of the fish are to be taken in larger or smaller quantities all the year round ; but some few are excepted, and their pursuit is not followed until the season arrives in which they are more abundant than usual. Fishing varies with different localities, and the abundance or scarcity of each kind depends almost entirely upon congeniality of ground to the tastes and habits of each particular genus. There are some kinds of fish, for instance, which are scarce eastward of the Isle of Wight, but abound westward of it, as the whiting pollack, which frequents rocky ground. The consequence is that but few whiting pollack are met with between these limits, and these only on the isolated rocky patches of ground, which are few and far between. At Flamborough, however, and Filey, where the coast is of an iron-bound character, and at the latter of which rocks jut out a considerable distance into the sea, pollack abound, and are caught in considerable quantities. They are very lively fish, take a fly well, and afford good sport to amateurs with different natural as well as artificial baits. The month of October is an excellent one for sea-fishing, and every kind which takes the hook in our seas may then be captured. Whiting are in this month often immensely plentiful, both in the offing and near the shore, and much larger than earlier in the year. Mackerel have not yet left the coast, and are also taken both sailing and at anchor, and particularly at anchor in arms of the sea and sheltered deep-water harbours. Dabs in this month are numerous and fine. Pollack are not so numerous in this as in previous months, but some are to be caught all the year round on the western division of the south coast. Congers frequent the shore much in October, and do not confine themselves to rocky ground, but accompany the shoals of whiting into the different bays of the coast. When whiting fishing a few cod are often taken, with many gurnards and sea-bream. Even when not especially fished for, dabs, on the eastern portion of the south coast, form a considerable part of the catch. Pout are also plentiful and large. Bass are taken in October, but not much after this month. Hake are often numerouse and fine in Devon and Cornwall. There is good angling from piers, quays, and rocks, and in docks, for mullet, and atherine or sand-smelts. On the east division of the south coast cod are much fished for with long lines, trots or bolters. In November the fishing is as in October; pollack are still scarce, but cod more plentiful; bass only occasionally taken. December as in November, but the mackerel have almost entirely ceased to be taken with hook and line. After Christmas whiting fishing falls off, and gets less and less until the middle of May; but flat fish are very good and numerous until the end of March, about which time they spawn, and remain somewhat flabby and watery until August. In March and April is excellent pollock fishing, which prevails until the end of July; mackerel fishing also begins in this month with hook and line, continuing until the end of October. On the east division of the coast mackerel are not much taken in this manner until the middle of June. All kinds of fishing are much better off Dartmouth and westwards than to the eastward thereof. Trawling goes on everywhere all the year round."

The cod generally swims low, and takes a bait either on the bottom or close to it. Pollack are found off the rocky points and on or close to foul ground; whiting usually on soft ground, and dabs on both soft oozy bottoms and hard sand; mullet and sand-smelts at the mouth of streams or drains, &c. Before fishing it is a good plan to purchase the chart or plan of that particular harbour, arm of the sea, or section of coast you may visit.

For a certain kind of information you must rely on residents of the locality—such as the time of tide to fish certain spots, where to procure bait, and the precise marks frequently requisite for pout-fishing, &c.

In fishing from a boat four lines are commonly used, and the leads of one pair of lines should always be double the weight of those on the others, in order that they may work clear. Leads of about three-quarters of an ounce in weight are heavy enough for the light lines, and an additional line without lead is frequently used, on which many gar-fish or long-noses are taken.

The necessity of using as fine tackle as possible, consistent with the requisite strength, is now generally admitted, and this is of the highest importance at any depth under ten fathoms; but from ten to thirty fathoms, where you not unfrequently meet with cod, ling, hake, very large pollack, and haddock, although only trying for whiting, you must, if you use gut, have at least six links—that is to say, of three strands, two in each strand. The white, green, or brown Bridport snooding, however, is in most use in this deep-sea fishing, because of the great wear and tear caused by the teeth of the fish, especially of the dog-fish—the fisherman's plague.

The white snooding, made of various sizes, when laid up double, forms excellent lines for mackerel or other light fishing. They are much more stiff than an ordinary hemp line, and, consequently, rarely foul. Use a long trace of fine gimp next the line, and salmon-gut next the hook. It may be well to remark here, that whether the gut is attached to the hook by half hitches over its flattened end, or whipped on as for fresh-water fishing, an eighth of an inch at least above the hook should be evenly whipped with silk, and touched over with "finishing varnish;" this will prevent the hook "breaking off at the neck."

A correspondent thus describes the tackle he uses: "Get a common cord line of about ten fathoms, with a lead sinker weighing 2lb., and with three or four pieces of cane or whalebone placed one above the other on the lines, at distance of 3ft. apart; to the outer end of each of these outriggers a twisted gut snood bearing a Limerick hook, is attached; close up to the butt of the other end a hole is bored, through which the line passes, and a knot being then tied above and below it, the outrigger revolves freely, so that when in the water the set of the tide or the struggles of a big fish has no effect in entangling the line. With tackle of this description, and using lugworms or soldiers for bait, I have," he says, "frequently caught three or four fish at a haul. The fish were generally whiting, pout, bream, and dabs; sometimes conger, skate, and dog-fish." For the heavier part of snoods, white horsehair is infinitely preferable to any hemp or silk line.

A snood may be inconveniently long, therefore bring the length to 6ft. of line rather slighter than the main line. To the lower end of this attach a trace or flight of hooks constructed in the following manner:—Take a length of 3ft. of very strong gimp, form a loop on each end of it, and then make a third loop by forming a bight 8in. from one end, serving the double gimp over with waxed thread for about an inch. This third loop serves as a point of attachment to the 6ft. snood before mentioned, a strong brass swivel intervening if desirable. This gives two ends for the hooks—one 6in., the other about two feet long. To prevent the short end from lying straight alongside the other, make it take a single half hitch around the long one, which causes it, from the rigidity of the gimp, to stand out laterally, and thus to keep the hook which is to be attached to it clear of the other portion. Another hook is then fastened to the loop at the long end, and the trace so far is complete. Snood the hooks to a foot of gimp, which of course must be finer than that on the trace. Some prefer twisted gut. Should the tide be strong enough to keep a longer length of snooding off the ground, substitute a second trace for the lower hook, by which you get an additional lateral hook, and ensure better sport. Use precisely the same form of articulated snood for cod fishing, and then adopt the plan recommended by Mr. Wilcocks in his excellent fishing oracle, "The Sea Fisherman"—viz., that of coupling each individual hook with a strong brass swivel. There is, however, another arrangement for taking whiting, which appears to be the petted one on the Cornish coast, viz., the chopstick. This is usually made by pressing a spreader of whalebone, fifteen or sixteen inches long, through a conical lead, of a weight proportioned to the run of tide and thickness of the line. The hooks are attached to loops at the end of the spreader. The objections urged against this plan are, that the proximity of the bait to the lead is apt to frighten the fish; that a supply of chopsticks is required, with leads of different weights, to suit the tide; and that a bite is not so easily felt when communicated through the spreader and lead. To obviate these difficulties Mr. Hearder, of Plymouth has contrived a new form of chopstick, which permits the substitution of leads of different weights for each other. It is made of galvanized iron wire, in the following manner: Take a piece of wire, about twenty inches in length, and bend the centre portion of it into the form of the figure 8 or the letter S; in either case the ends must be made to cross the centre, and pass on in a straight line in opposite directions. The extremities are each to be bent into a loop and soldered. To attach this to the line and lead, first pass the cord loop of the lead through the lower loop of the figure 8, and over the upper one; thus the lead is slung in an instant. Then pass the loop of the line through the upper loop of the chopstick, and, bringing it down, slip it over the lead, and draw it up over the lower loop of the wire. The chopstick is thus clear of the lead, and is free to communicate the smallest intimation of a bite at once to the hand of the fisherman. The strain of the line and lead upon the upper and lower loops of the chopstick preserves it in a horizontal position with sufficient force to enable the fish to hook itself. Should the force of the tide vary so as to carry the lead too far from the ground, a heavier one can be substituted in less than a minute. Boat-shaped leads are perhaps preferable, as they prevent the arms of the chopstick from revolving. This arrangement is practically of great service for pouting fishing, as you have frequently to shift leads to accommodate the difference in the strength of tide between the neutral points of high and low water, and for this kind of fishing a line cannot be too sensitive.

With a rod from a pier-head, or on the inside thereof, in a gentle eddy, or off rocks in a quiet bay, the paternoster is undoubtedly superior to any other line, and you have a chance of taking both flat and round fish.

Rods in boats, except in fly-fishing for bass or pollack, are generally much in the way at sea.

A live sand-eel is a capital bait for sea-fish. To bait, enter the hook in the mouth of the eel and bring it out at the gills, and then hook the bait slightly across the throat. The fishing is best in a tideway, at anchor, and the tackle consists of strong horsehair lines, twenty fathoms long, with pipe leads at every two and a half fathoms, to which is added by way of snood two fathoms of white hair, one of fine white hemp snooding, and two lengths of double-twisted gut for pollack, or three of stout single for mackerel.

"Of all sinkers," says Mr. Wilcocks, "boat-shaped leads are the best, varying, according to the depth and strength of tide, from half a pound to two pounds in weight, cast with a brass wire lengthways in them, with an eye at either end, and projecting beyond the leads two-and-a-half or three inches, to which fasten 6ft. of fine white snooding line, and, making a knot at the end, loop on double twisted (or stronger) gut, which is all in one piece, having a hook at each end, over it, doubling the gut so that one hook may hang 8in. below the other. It is a great advantage to be able to detach your hooks readily from your line in case of a foul, and this is effected by the above arrangement. In deep water, a strong brass or copper swivel may be added, but in less than ten fathoms is hardly required; neither should the snood be so long for dabs or pout, 5ft. from lead to hook being quite sufficient. To make a mould for this lead, get a piece of fir wood 1ft. long and 4in square, without knots, a saw-cut through the middle longitudinally, and with a spokeshave take out of the sides and edge of each of these pieces half the dimensions of the lead; now screw the two tightly together, and the mould is complete. Give the wire the form of a bent bow, and placing it in the mould, secure it with a lump of clay or putty at each end, pour in the lead, which, after six or eight minutes, may be taken out of the mould. Leads of three sizes may be cast in the same mould by partly filling it, and as the stout wire will not bend sufficiently to go beneath the surface of these smaller leads, cast them with a hole at each end, by inserting two pegs in the mould, and afterwards fit them with sewed yarn as the fishermen. Moulds can, of course, be made for all sizes, either in wood or freestone; or a large lead may be pressed into sand, according to the weight required. Two lines may be worked by one man, except in very shallow water in whiting catching; but for dabs, from four to six, with mussel bait, the lines cast so as to radiate from the boat."

SEA FLY-FISHING.

There are two perfectly distinct branches of fly-fishing with the artificial fly that may be successfully employed in salt water, each differing from the other in the tackle employed and the mode of using it. The first method is by casting the flies on the surface by means of a rod and line, in the same way as in the ordinary course of artificial fly-fishing in the fresh waters; the other is by trailing the flies under the surface, which is carried on at various depths, from just beneath the top to the very bottom of the water, according to circumstances.

As to the particular time of tide or day that is best adapted to insure sport, it is impossible to lay down any general rules in this. As to tide, everything depends on local situation. In some places it is useless to fish on the flood, at others on the ebb, and it is knowing the proper time of tide adapted to each particular locality that the success in sea-fishing mainly depends. As to the time of day, as a general rule morning and evening are the best times. As to the weather, the best for fly-fishing is a fresh breeze with a cloudy sky. In calm weather the fish are always shy. The largest fish will generally take best in blowing weather; a downright bad day of wind and rain, but not extremely cold, is the best you could possibly select.

The right time of year for this kind of fishing is during the summer months and early part of the autumn, at which seasons bass usually assemble together in large shoals. This is the most favourable time for fishing for them, as they are generally then upon the feed. It is therefore important to note the particular time of day or tide at which the active movements of these fishes occur, as also to mark well the spot; for they will continue for days and even weeks together to resort to the same particular place, and practise their gambols at about the same time of tide.

In rivers and estuaries, as a general rule, bass are most sportive about the time of last quarter ebb and the first quarter flood, at which time they may generally be met with rather close to the shore, especially in the neighbourhood of those small creeks, then left dry, that discharge their waters into the main stream. At high water, the most likely spots are some ten or fifteen yards from the shore, particularly over those places where bog-worms are concealed beneath the mud. The proper weather for fishing under the latter circumstances is when the wind blows freshly off the shore, ruffling up the surface, but without having sufficient distance to traverse over the water to raise a wave; and on these occasions the bass will approach the shore boldly, and take a bait in scarcely more water than will serve them to swim in. The best plan is to use a good double-handed salmon-rod, with reel line and foot line the same as is employed in that kind of fishing. As for the flies, they should be trimmed on the largest size salmon hooks. The imitations found to answer the best are of a light colour, commonly with white wings, and a white, or very light-coloured body, rather slight and ribbed, or sometimes wholly covered with tinsel; a turn or two of a peacock's harl under the wings has also been considered an attraction, likewise the gaudiest salmon-flies. A killing fly is a piece of skin cut from the silvery side of the bass itself, about a couple of inches long, rather wider than the blade of an ordinary-sized penknife. The bait should be of a pointed form at each extremity, with the hook run through at one end, the bait being fixed in the very centre of the bend of the hook. This lure is cast very much in the same manner as a fly, and, being an excessively tough bait, you may flog away without much danger of whipping it off your hook. A piece of the skin of pork, either fresh or salt, cut in the same form, may be resorted to as a substitute for the fish skin. Two or three flies may be called into the service.

Work your flies in a very jerking manner. The best depth of water is two to four or five feet; the best casts are all the inlets of rocks, and sandy bays; particularly throw into the frill of bursting waves, as the bass come nearly ashore. When you have hooked your fish, be sure to keep an upright hand, bearing heavily on him, for his upper jaw no hook will enter—if you give only a moment of slack line, the hook will come out; any other portion of the bass is certain, and the hold-fast is sure, and strong beyond any other fish.

This kind of fishing is best managed from a boat, but it may occasionally be done with advantage from the shore, especially along the edges of rivers or estuaries when the ground is sufficiently hard to permit you to approach near the water. The disadvantage of the latter plan is, that although you can get close to the water, you cannot always depend upon coming within reach of the fish, which sometimes do not approach near enough to the shore to catch a sight of any lure you can offer to their notice for days or even weeks together, although all this time you may detect them playing about just beyond your reach. The proper sort of boat for this service is a rowing boat of from twelve to fifteen feet in length, and of tolerable breadth of beam, with rather a flat floor, so as to afford a firm footing when you are standing upright to cast your line. It is also essential that your boat should possess such stability as will insure her not upsetting in case you happen to tumble with your body across the gunwhale. The boat should be of rather a short model, as one so constructed may be turned about quickly in any direction. On this account it is a great advantage to have an assistant to manage the boat.

In commencing operations, the first thing to be attended to is to discover the whereabouts of the fishes. This may often be detected by the rippling they make in playing about on the top of the water; but as this only occurs at intervals, depending in a great measure upon the state of the tide at the particular locality, and sometimes does not occur at all during the whole course of the day, the best that can be done under the latter circumstances is to cast your flies over such spots as you consider it most likely the fish will be in. The proper course to adopt in approaching the fish is—first of all to get well to windward, and then let the boat drift down towards where the fish are likely to be, taking care to keep the boat (provided you have no assistant with you) either wholly or partially broadside to the wind, so as to prevent her drifting down too fast. If you have an assistant, the rate of speed can be regulated by the use of the oars. Care must be taken to avoid making any splash with them. It is useless to attempt to catch these fishes on the surface from a boat that has her sails set, which is sufficient to scare every bass. This shyness of approaching objects seems peculiar to bass; for pollack, mackerel, and, in fact, all other kinds of fish, appear to have no fear whatever of a boat, and, unless a heavy splash is kept up by the oars, will sometime seize on a bait almost touching the boat's side or bottom.

When a fish (a bass) rises and seizes on the fly, his own weight and the turn he makes in the water is generally sufficient to fix the hook.

The second kind of fly-fishing is performed thus: Fish in salt water, on a rocky coast, in fine still summer evenings, from seven till ten p.m. Use a two-oared light boat, two plain ash 12-feet rods, light cord or strong hair lines, with 6 feet of white hair or strong gut next the hook. The fly is simply a white downy feather, or two of them, tied on a common whiting hook. While the boat is being pulled gently along, at about fifty to one hundred yards from shore, the fisher inverts his rods, sticking the points 3ft. deep in the water, and, with one in each hand, he alternately raises and depresses his flies. You catch numbers of rock fish of different kinds, codlings, and a bluish-green-backed fish, called "poddlies," and the fish weigh from a few ounces to four pounds and five pounds.

TACKLE AND FLY CASE.

Procure a "general tackle case," such as is used by bottom-fishers, but containing half a dozen parchment fly-leaves in addition to the ordinary pockets and space for the reel. Stitch down the middle of three of the fly-leaves, and in the small pocket so made store your dubbing, silk wound on card, tinsel, &c. The remaining leaves will hold small envelopes containing hackles, toppings, jay's feathers, &c. &c. Mark on the back of each of these envelopes the name of its contents. In the space where the reel ought to go you can put large envelopes with feathers for trout fly wings, salmon-fly wings, large dyed hackles, &c. One of the large pockets of the book itself will hold fine silk for fly making, and coarse silk for rod lapping; another will hold gut, both salmon and trout; while the third devote to a broad thin flat file for mending the rod, and some lint and plaster for mending yourself when damaged; lastly, loose hooks are carried in the square moveable pockets, which are intended for bait hooks, and the cobbler's wax in a folded bit of parchment, to which it never sticks, and in which it does not get brittle.

Again: have made a light deal box, varnished, 1ft. long, 7in. wide, 5in. high when closed. Inside, a narrow space is partitioned off, the whole length of the box, and again subdivided; the larger space for long feathers, hank of gut, and the smaller for two bags containing mohair and pig's wool. There is a space left, 5in. wide and about 11in. long, which will hold a very large number of envelopes—arranged alphabetically—containing selected portions of feathers, furs, gut, hackles, &c. Above the small envelopes there is a light cedar tray 1½in. deep, with partitions across, having three spaces 1½in. wide, to contain silks and twist on cedar winders, &c.; then a space 2in. wide for papers of hooks, rings, swivels; and the remaining room is to hold apparatus, bottle of varnish, wax, and small box to contain sundries. If the box is not for travelling, two inches extra width will give more room for hanks of gut and long feathers. For travelling the box would do very well two inches shorter and without the long envelope partition, and would then be 10in. long, 6in. wide, and 5in. deep. Whole wings should be kept at home; reels are best packed in the rod case.

Again: A case made like a miniature chest of drawers is as convenient as any. The dimensions are as follows: 8 inches high, 7 inches deep, (the direction in which the drawers run), and 1 foot long. With this size, by proper arrangement, there may be nine drawers introduced, two rows, four in each, side by side, and one large drawer at the bottom. These should be all lined with lead or tin foil, of the kind used for packing snuff in. It is easily attached to the wood with clear thin glue, and is as easily cut and fitted as paper. When lined, a number of shallow trays, exactly fitting the drawers, must be prepared, and covered inside and out with the foil. These trays are now to be divided into compartments by thin slips of wood covered with foil, and then glued into their places. One drawer, with its tray, will contain a great number of hooks and swivels, each size and description being deposited in its own compartment. A small magnet will be found very useful for picking out the kinds required for use. The feather trays should have longer spaces left in them between the divisions than those intended for hooks, &c.; dubbing, of various shades and kinds, should have at least one drawer devoted to it; silks of different hues and degrees of fineness another; gold and silver twist on reels or winders its own tray, and so on. The hackles and other feathers should always be carefully picked over and selected as to shape, size, and quality, and then laid with the quill ends all in one direction. A thin piece of sheet lead, cut so as to fit the compartment, and covered with white paper, on which the description of feather it covers is written, should be then laid on; a little loop made of stout silk, run through the centre of each of these "feather weights," renders them easy to take out and drop in. The large bottom drawer will contain a hank or so of gut, "a little commonplace book," in which all receipts for staining gut, dying feathers, &c., &c., should be carefully copied, and any other matters which may be found useful and require stowage room. A few little tools and odd matters may always be added to the working stock of such a case as this with advantage — such as a very fine file, of the discription used by watchmakers, a pair of forceps (as used in dissection) for taking up feathers and small substances, a fine-pointed pair of plyers, self-acting fly-nippers, a few stout needles, two pair of scissors—one of the ordinary nail-scissors, and the other fine, narrow-bladed, turned off at an angle from the line of the hinge pin; a little coil of soft brass wire, packets of rod rings, a bit of foil to cut up for them, a small tin box for shoemakers' wax, a few lumps of camphor to keep off the moths, and a bottle of finishing varnish (the varnish is made by dissolving shellac in methylated spirits until of the consistency of ordinary varnish). When travelling and scrambling about in wild countries, it is well to have a solid leather cover, with straps, to pack the case in.

Again: Get a box one foot long, ten inches broad, and seven inches deep, with a tray inside, of one and three-quarter inches deep, subdivided into smaller spaces. In these keep small papers, holding hooks of different sizes, silks, wools, &c. The lower part of the bex has one partition across, on one side of which are wings, and such larger feathers as can lie detached; and on the other side are papers containing the various kinds of hackles and smaller feathers, gut, furs, &c.

TIDE-FISHING.

Buy about sixty yards of strong whipcord, and five dozen trout-bait hooks on double gut; add about one foot of small whipcord to each length of gut; fasten the other end of the small whipcord to the strong whipcord at one yard apart, and each short line and hook will hang down about eighteen inches from the main line; the rest of the apparatus consists of three flat stones and a couple of bungs or small pieces of woods for floats; the whole is a fisherman's "long line" in miniature. The best bait for this line is the common "sand eel" divided into two pieces. It takes two persons to set the line. Having coiled it up carefully in a basket, proceed to the edge of the water just when the tide is beginning to flow, and extend the line parallel with the water. Carefully bait each hook; fasten each end of the main line to one of the stones; put one of the floats by a separate line about three feet long to each stone, then one at each end of the line; carry it and the stone into about two feet of water, beyond where the weeds are floating just at the edge; see that the short lines all hang clear, let down the stones to the bottom with the main line slack, see that your floats are in free action, and your line is set. The remaining stone place on the sand at the edge of the water to indicate the spot, and inform you when you can wade in and take up the line.

An extemporary tackle can be easily made by getting a hank of cord, and some hooks on snoods, and fixing them to the line at such a distance apart as will prevent them from catching one another. Then untwist the string at the end for about two or three feet, and cut off half the untwisted part, so as to weaken the line in that part; to this end fasten a stone. Having baited the hooks swing the stone out seaward. If the stone should catch in rocks, &c., a sharp jerk will break the weakened string at the end next the stone, when a fresh stone can easily be substituted.

TRANSIT OF FISH.

Procure a quantity of long moss, and have it well washed and partly drained; then put a layer of it at the bottom of a tub or box, with a hole at the base, and upon this place, horizontally and in a natural position, a few fishes, separating them as much as possible with damp moss. Pack moss and fishes in this way in alternate layers, to the top of the vessel, if required. When this operation is completed—and it should be done with as little delay as possible—a little clean pool water may be gently poured over the whole. If the fish have to be conveyed over bad roads in a spring-cart, which is the only admissible vehicle upon bad roads, it should be nearly half filled with brewer's grains or manure, and the vessel containing the fish should be firmly bedded in the centre of the load, but not to touch the bottom of the cart. At intervals of perhaps half an hour, if the fish are of a delicate kind, it will be necessary to saturate the moss from the top with fresh water; and on very long journeys the fish may be taken out and confined in a large landing or cleech net, which may be placed in water while the moss is being washed and replaced, or, what is better, exchanged.

When the fish are turned off let them be put at once, in the gentlest manner, into a shady deep part of the pool. The water there will be cool, and they will sooner revive than they would in shallow water.

Fish are carried with least risk in a boat; and they may be carried with tolerable safety slung upon a pole between two men. The ordinary agricultural waggon or cart is almost certain death.

TRIMMERS, BAITING OF.

First thread the fish in the ordinary way, taking up a small portion of the flesh only—just enough to hold the hook in its place; then fix a second hook into the back fin, and join the gimp to which it is fixed on to the gimp which threads the fish. The strain is then upon the back fin, and not upon the wound in the fish's side; the fish is perfectly secure; not being in pain, lives a long time, and, as there are two sets of hooks present, there is a double chance of catching the pike that runs at it.

TROTS, RAFTS FOR CARRYING OUT.

The Maltese fishermen sometimes use a little raft of canes tied together, perhaps about a yard square, with a mast and sail. To this raft is fastened a very long line, with baited hooks at intervals of three or four feet; and there are floats occasionally, to keep the line from the bottom, and to show when there is a bite. Taking advantage of an off-shore wind, this apparatus is carried out into deep water.

Mr. Wilcocks, in his "Sea Fisherman," describes an apparatus of the same kind used in Guernsey, and called a "lester cock," he says: "The sunken lester-cock is useful for ground fish, and is formed of two zinc cylinders 18in. in length and 2½in. in diameter, connected by two slips of flat wood about four inches from each end, to the middle of one of which a mast and sail is attached. Each of these cylinders has a small hole on both the upper and under sides, consequently the whole affair sinks after the cylinders become filled with water. The sunken lester-cocks are useful in towing out a trot for ground fish, and will sink more rapidly by attaching a bag of sand (if necessary), to overcome the buoyancy of the slips of wood and mast. To a person unprovided with a boat, or living on a coast consisting of steep rocks where a boat cannot be kept, this method may be very useful. It will not answer where much weed is floating about, or in a strong tide running along shore, when recourse must be had to the ordinary throw-out or leger line, or, if not too much weed, to the outhaul-bolter, worked through a block made fast to an anchor or heavy stone laid out at low water.

TROUT-COOKING BY THE RIVER SIDE.

Kindle a fire of dry wood; take your fish when just out of the water; fill his mouth with salt; roll him up in two or three folds of an old newspaper, twisting the ends well together; immerse all in the water until the paper has become thoroughly saturated; then lay the fish among the embers; when the paper presents a well-charred appearance the trout is properly done. The fish is not to be cut open or cleansed.

Again: Having spread some shingle and flat stones over a small space, light a wood fire on the top, and let it burn down; then put the trout, split open and wiped (but not wetted), on some of the stones, which by this time will be very hot, and heap the rest together with the ashes over them, and in a few minutes they will be done.

VARNISH FOR TACKLE.

Break up small some shellac, and dissolve in double the bulk of spirits of wine. See that the tackle be quite dry before using, and the varnish quite dry before fishing. For rods, the best varnish is coachmaker's. Two coats, thoroughly dried, are sufficient.

One pennyworth each of gum shellac, sandarach, and mastic, dissolved in six pennyworth of spirits of wine. For use, place the bottle containing the varnish in hot water, doing it gradually so as to avoid the heat cracking the bottle, and apply with camel-hair brush. Three or four coats, at intervals of about twenty-four hours, should be put on.

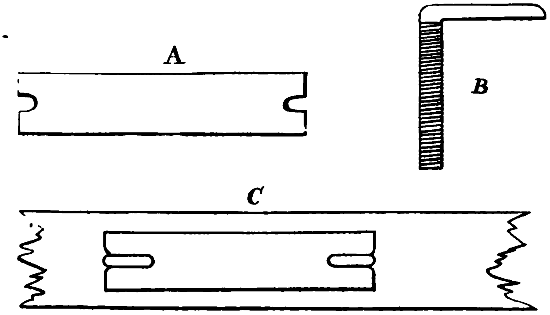
WEIGHING HEAVY FISH.

Supposing you catch a fish which your spring balance is not strong enough to weigh, fix two strong loops, one to each end of the gaff, which suspend by them horizontally; then firmly secure the fish to near the centre, and, taking the spring balance, apply it first to weigh one end of the gaff and then the other, being careful to keep the stick quite horizontal. Being added together and allowing for the weight of gaff, cord,

&c., leaves the absolute weight of the fish. As an approximate weight where the spring balance is absent, take the length and girth of the fish in inches. Add one third of the length, multiply by the square of the girth and divide by 1000 the product will be the weight in pounds.

WINCH FITTINGS.

The brass strap of the reel has a notch cut in each end, and two small brass screws are screwed into the but of the rod at any convenient place. A half turn of either screw is sufficient to fix or disengage the reel.



A, strap of reel, half size.
B, screw, full size.
C, part of rod, but with reel-strap fixed, half size.

NETS.

CASTING NETS, SILK FOR.

The best silk for casting nets is that used in sewing machines by bootmakers; it is called machine twist; and is about two shillings per ounce.

Throwing of.—The following is the Greek plan: which is, however, only applicable to a net of not more than 10lb. weight, unless the individual happens to have a very powerful arm. It is as follows: Take the top of the net in your right hand, the lead line being spread out in a circle on the ground with your left. Then draw the net towards you, keeping you position till the side next to you is about two feet across, and the lead line quite straight; the outer part of the net is in a zigzag form; in fact, the lead line is like a strung bow with the string next to you. Then take the top of the net in your left hand, slipping the outside of the right arm down the net on the side next to you till about twelve inches from the lead line, placing the thumb over the folds of the net and grasping the whole. Lift off the ground with the elbow as high as the chest, so as to prevent the net slipping off the fore arm. Then coil the remainder of the net, and cord in folds from left to right over the thumb, still keeping a tight hold of the first grasp. The coils should be about eight or ten inches in diameter. After this is done grasp all the coils in the centre with the thumb and first finger. Tuck up a pinch of the net farthest from your elbow, and place it under the third finger of the right hand, and grasp the lead line next you with your left hand. The end of the cord must be fastened high up on your left arm. When casting retain the lead line your left hand holds for a very short time after the net has left your right fore arm, so as to allow the net to spread. The leads, if you hold your arm properly, should hang about as far as the waist, so that if a shoal of fish lie too far from the shore, you can wade out as deep as your waist and be able to cast the net, which is not the case with other methods.

NETS AND NETTING.

The following description of nets and their making was written by Mr. W. B. Tegetmeier, by whose kind permission I am enabled to give it to my readers:

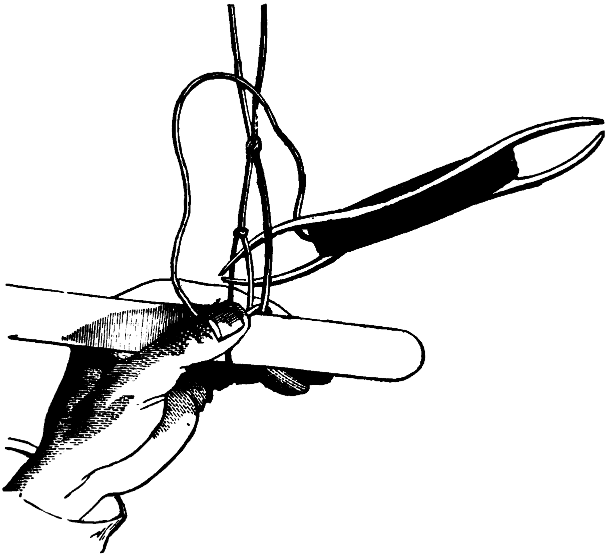


Fig. 1.

The tools are, a *needle* on which the cord is wound, and a *spool* on which the netting is made.

A *mesh* is a complete opening between the threads of a net, and a *loop* is, the loop formed around the spool as each knot is made in succession, the last row netted always consisting of a series of loops, not of finished meshes.

The ordinary mode of forming the knot I need not describe. The disadvantage of the mode is its extreme complexity. The mode I always adopted was one that I learned from an Irish fisherman, and is performed thus:—Let the spool and netting be held in the usual manner. Then, to make a new loop, bring the needle backward over the spool; then carry it forward under the spool, *but without catching the string on any finger.* Pass the needle upwards through the loop that is to be taken up, and pull it close up to the spool, seizing the twine passing through the loop with the forefinger and thumb of the left hand. The loose twine should be allowed to fall over to the left, and down in front over the netting; and the needle should then be passed upward between the loop that is being taken up and the last one secured. On tightening the loose twine, the knot is completed.

This mode of netting is shown in the engraving (Fig. 1). Where the twine may be traced from the last-formed knot, round the spool, through the loop, then to the left, where it is secured by the thumb; the loose twine is shown lying over the netting, and the point of the needle is just inserted behind the loop that is being taken up. To finish the knot, the needle must be pulled through, and the string drawn tight. Great rapidity is speedily obtained.

With stout cord the advantage is very great; there is no sawing required to tighten the knot, consequently no fraying either of the twine or the fingers. Very stout cord, such as that employed for sheep-nets or the walling of trammels, may be used with great facility. Another immense advantage possessed by this knot is, that it can be made, using one, two, or three fingers instead of the spool, and with a short end of the string without a needle, so that in mending nets it is really invaluable.

The method is not adapted to very small netting, and it is always necessary that the spool should be larger than the needle, otherwise the latter sticks in passing between the loops. Again, there are certain stitches that cannot be made in this manner, as the first row or foundation of a net, and the second loop when two loops are netted in one.

In an old pamphlet on "The Art of Netting," by S. F. Every, Esq., the author describes a new way of holding the spool, by which he states his speed was greatly increased.

It will be evident, upon an inspection of the figure, that the thumb and first finger hold the mesh, leaving the three remaining fingers perfectly at liberty to stretch-out, and hold up the next mesh or loop to be taken, besides drawing back to free themselves from the string, at the proper moment, during the operation of forming the knot. The spool being in its place, with the forefinger turned behind it, under the netting, and the needle in the right hand, with the string stretched out, the first part of the operation is to pass the needle round the end of the mesh to the right, laying the string over the second and third fingers, then taking it forward and catching it under the end of the thumb, where it is held whilst the needle passes back again, throwing the string forward on the net already made, *at which instant the left hand should be turned with the knuckles downwards, and the two fingers having string upon them should be stretched forward under the mesh about to be taken;* in this position there is an open passage for the needle, which has past round, and is *thrown* through, being caught on the other side; as it passes through, the string gets on the little finger, and the other two may be withdrawn at once; therefore on the needle being snatched back, one pull ties the knot, without any sawing or trouble, which always occurs to some extent in the common method. The movement here described cannot be properly effected, unless the netting is laid over a table, or something by which it is held up on a level with the hand, a position much more favourable for speed than when the net hangs down.

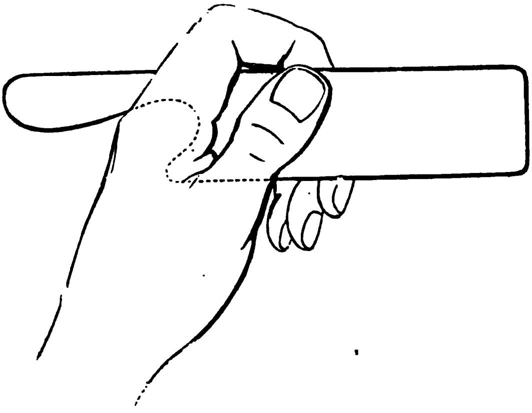


Fig. 2.

When a piece of netting is made in the ordinary manner, the meshes are diamond or lozenge shape. When nets are required to be of a square or oblong shape, it will be found a great saving of labour and material to make them of square or right-angled meshes, such as those shown in the figure. These square-meshed nets are made by commencing at one angle or corner, and netting diagonally across the square to the opposite corner. In beginning a square-meshed net, one loop is made on the cord which is used as a foundation; the spool is then withdrawn, and two loops are netted into the one first made. The spool is again withdrawn from these two, and a new row commenced; this will consist of three loops, two being formed by taking up the last loop of the previous row twice. The netting is to be continued in the same manner, the last loop of every row being taken up twice. By this means a half square of netting will be formed, of which the last row is the diagonal, and the two sides form the selvages on each side of the half-square. When the sides of the square are of the required length, a single row should be netted without the extra loop at the end; and then to form the remaining half of the square, the rows should be continued, but with this difference, that the last two loops in every row should be taken up with the needle at once; thus the width of the netting will be gradually diminished to one mesh, and when the net is stretched out it will be found a complete square formed of square meshes. In order to make the angles neater, the spool should be withdrawn before the last knot is tightened, so that the last loop is made to come into the angle; and the first knot should be untied, and the loop also drawn up tight, so as to render the net correct in shape.

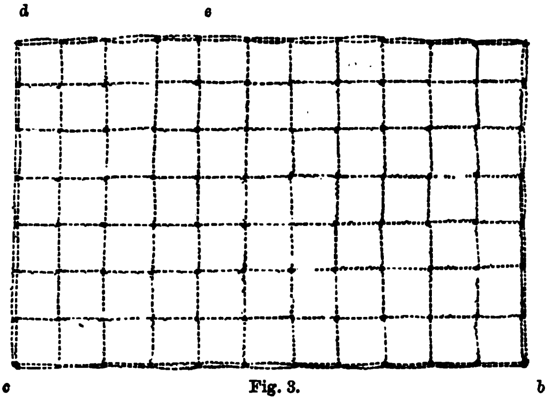


Fig. 3.

The netting of an oblong net, such as shown in the figure, is a rather more complicated matter. This is commenced with a half-square, as before, the length of either side determining the width of the net. This done, at the end of the next row the last two loops are to be taken up at once; but on returning to the end of the succeeding row, two loops are to be netted into one, as before, and this alteration is to be continued. At the end of every other row two loops are to be taken up at once, and at the end of the alternate rows two loops are to be netted into one. The side at which this latter is done—*a*, *c*, *d*—will be the long side of the oblong end; when this is of the required length, two loops are taken up at *each end of each row*, and the net diminished to the point *e*. In making an oblong, great care must be taken always to diminish or increase at the right side of the net, otherwise a confused mass of useless netting will be the result. This is easily avoided if a few threads of coloured string or a riband is tied at the angle *b*, to show which side should be diminished by taking up two loops in one. The advantages of square over the diamond-meshed nets are very great. Less string, fewer knots, and less labour are required in their manufacture, and from the meshes being more open they permit the water to flow more freely through them. For the walls of trammels they are particularly advantageous, and enable the nets to capture a much larger number of fish than those with a diamond walling. Hexagonal netting is not of any great utility, but it may interest some persons to know how it is made. To produce this form of mesh, the netting must be worked on the old-fashioned well-known plan, the knot being made just as usual; but before drawing the twine tight the needle is passed from right to left under the twine, which runs over the forefinger. This, on tightening the knot, will be found to give a complete twist to the loop that is being taken up, and consequently to produce the hexagonal form of mesh. Having spoken of the three varieties of diamond, square, and hexagonal mesh, I have now to direct attention to the mode of forming false or additional meshes. These are absolutely indispensable in the construction of many nets. Fixed false or additional meshes are most easily made by netting two loops into one. By netting two loops into one an additional loop or mesh is gained, and the net consequently widened at that part.

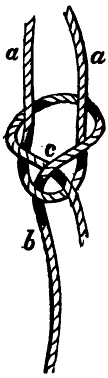


Fig. 4.

Loose false meshes are made in a very different manner. When it is wanted to insert a loose additional loop, the needle is passed round the spool and through the loop *in the second row* from the spool—that is, beyond the loop last taken up, and between it and the one which in plain netting would be the next taken up. The twine thus passed through the *loop in the second row* is then pulled upward toward the spool, secured by the thumb, and the knot made by throwing the loose twine to the left, bringing the needle round to the right, and passing it from right to left under the two pieces of cord going to and coming from the loop taken up. After this the netting is conducted in the usual manner until a second false mesh is required. By this manœuvre an additional loop is gained in the row, and in a manner which is for many purposes superior to that resulting from a tight false mesh. The first step towards acquiring this power consists in learning to make a bend knot. To accomplish this, bend a piece of twine into a loop *a*, *a*, Fig. 4; pass a second piece of cord, *b*, through the loop from the further side; carry *b* round behind the two legs of the loop, then bring it forward and pass it under itself, as at *c*; pull the ends tight, and the knot is completed. There is a quicker way of making this knot, when two loose ends of string are used, but as I am desirous of showing how it is made on a loop, I have preferred illustrating the above plan. A slight degree of attention will show that is precisely the same knot as that which unites together the loops in a net; and this mode of forming the knot is very evident when netting is made on the fishermen's plan.

Mending nets.—In mending a torn or damaged net the first operation is to spread the net out as flatly as possible, *with the loops in the same position with regard to the mender as they were to the netter when the net was made.* The damaged or torn part must then be cut away in regular rows, as shown in Fig. 5, where the whole of that part represented by dotted lines is supposed to have been removed. The knots at 2, 3, 4, 5, and 6 must be unpicked, when these loops will remain uninjured, and the knots at 14, 15, 16, 17, and 18 must also be unpicked, so as to liberate the loose ends of those loops that have been cut away. The mender should then take a short needle (one of those alike at both ends is most convenient for mending), fill it, but not overfull, with twine of the same size as that used for the original netting; or twine slightly finer may be employed, as being new, it will be stronger than the old. The end of the twine should then be fastened by a bend knot to the loop 1, the needle passed through loop 2, then the twine should be taken between the thumb and forefinger of

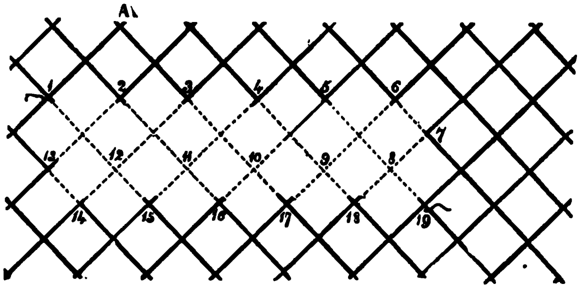


Fig. 5.

the right hand, and a length measured equal to the distance from the knot at 1 to just beyond the knot at A, this gives the exact length of twine required to form the new loop from 1 to 2; this new loop is caught on the little finger of the left hand, and pulled back; the point of the old loop 2 and the cord passing through it are held by the thumb and fore finger of the left hand, the loose twine thrown over to the left, the needle brought to the right, and the knot completed by passing the needle under the loop 2 from right to left. In short the loop 2 is taken up by the fishermen's knot, only made on the little finger, instead of on a spool, the length of the twine required to form the new loop being ascertained by measuring from 1 to A.

When there are large number of meshes to be filled in, a spool may be used, but when there are only a few it is neither necessary nor desirable to employ one. The new loops from 2 to 3, 3 to 4, 4 to 5, and 5 to 6 are made in the same way, and then the side 6, 7, must be made by netting into 7 as into a loop; this completes the first row of new loops. The second row has now to be netted into the first. If performed as recommended, without a spool, it may be worked backwards from right to left with great facility, or the netting may be turned over on to the other side, when the second row can be completed in the usual direction, from left to right. In this manner the whole space cut away must be filled up, until the last row is reached; this requires different treatment. In Fig 2 three rows of loops only are shown as having been removed. When the second has been entirely replaced the twine will be attached to the knot at 13; to complete the repair pass the needle through the loop 14, and secure it by a bend knot, taking care that the side 13, 14 is of the proper length; then net into loop 12 from 14, return to 15, and so on, connecting the whole in the following order—11, 16, 10, 17, 9, 18, 8, and 19, which completes the repair. Of course the reparation of larger rents and more extensive damages is only an extension of the same proceeding as is here described with reference to three rows of loops.

Joining nets.—There are three distinct modes of joining nets. To practise the first place the two rows that are to be united together so that the meshes actually correspond; then with a spool (from one-quarter to one-third less in size than that on which the net was made), net a row of loops along the conjoined margins, taking up one mesh of each net on the needle at the same time. Thus, if it is wished to make a cylinder or bag out of a piece of flat netting, fold or double it so that the first row or foundation is applied to the last row netted; then with a narrow spool net a new row of loops, taking up at once the corresponding meshes of the foundation, and those of the last row completed. There is one great disadvantage connected with this mode of joining, namely, that it limits the stretching of the net in the direction of the join. This is obviated by the following plan, illustrated in the engraving, where A and B represent two pieces of netting in the process of being joined, two pair of meshes having been already secured by the knots at 1 and 2. To unite the loops 5 and 6, pass the twine from knot 2 under the cord 3, and over 4; then through the two loops 5 and 6, securing the twine and the two loops with the forefinger and thumb of the left hand, then throw the hand with the needle to the left, so as to form the coil, as shown at 7. Bring the needle round to the right, and pass it under the cords at 8, 5, and 6, and over 7; on pulling the twine tight, the knot is completed.

In order to render the woodcut clearer, the two nets to be joined are represented as being spread out on a flat surface; but in practice it will be found much more convenient if the knot 1 is hung over a hook or peg, and the two nets allowed to fall down side by side, the netter straining the nets tightly as he works backwards from the knot 1.

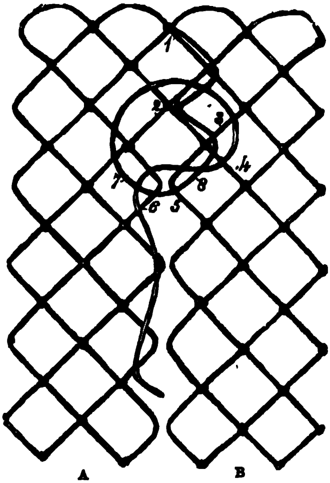


Fig. 6.

The manœuvre described will be found to unite the loops by means of the knot termed by sailors a half hitch, and from the mutual support afforded by the knots to each other, the points of union are perfectly secure. Moreover, this mode of joining secures the extension of the net in any direction of which it is capable; and thus there is never any undue strain upon any single knot which would risk its breaking.

In joining nets by either of these modes, they should be so arranged that the parts united should be the rows of loops and not the sides formed by the ends of the rows. Thus supposing it is wished to join a piece of flat (or as it is technically called *dead*) netting into a cylinder or bag), it will make a much neater and better piece of work to join the first and last rows, than if the two sides or selvages are fastened together; as in the latter case, when folded together, the position of the loops will not be found to correspond on the two sides.

When it is requisite to join two margins, the loops of which do not correspond, the best method of proceeding is to join them in the same manner as the last row of loops in a new piece of mending is joined to the loops of the old net.

I wish to describe a knot which will be found of the greatest use both in fastening the cord to which the foundation of a net is attached, and also in stretching out the different parts of a net whilst it is being mended. This useful knot is shown in the accompanying woodcut. A loop of cord is formed into an eye; through this the two ends of the same, or of a second cord, are passed and twisted, as shown in the figure; this secures the ends, and prevents them slipping back through the eye. The great advantage of this knot is, that when it is wished to shorten the cord, the eye is pushed on further, and the twist or half-bend pulled tight down to the eye. On the other hand, when it is wished to slacken the cord, the reverse plan is had recourse to.

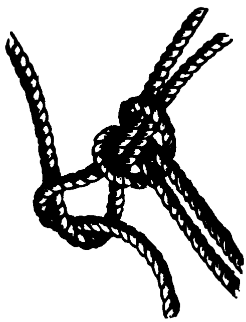


Fig. 7.

Bordering.—Bordering or bridling a net is often requisite to cause a piece of diamond or common netting to preserve its shape, and prevent its being over-stretched either in the direction of its length or its breadth. In order to do this, nothing more is requisite than to net along all the margins of the net that are to be bridled, a row of loops, on a spool one quarter less in size than that used for making the body of the net. Thus if the net be made on a two-inch spool, the border ought to be netted on one of rather less than an inch and a half. The neatness and utility of the bordering depends on the right proportion being observed; for if the spool used for bordering be too small, the net will bag in the centre; if it be too large, it will not prevent the net from being overstretched in any direction in which it may be pulled. If a square or oblong piece of diamond-meshed netting is properly bordered, it will be so stretched that every mesh is square, but the angles of the squares will be pointed to the margins, contrasting with a square or oblong piece of square-meshed netting, in which the sides of the square meshes are parallel with the margin of the net.

Cylindrical nets.—Cylindrical nets are required for many purposes. The most common mode is to net the requisite number of loops on the foundation cord, and then to take up on the needle the first loop made, then the second, and so on with all the loops of the first row; then those of the second row, and to continue netting round and round until the cylinder is of the required length. A cylindrical net may also be readily made by joining the two sides, or the first and last rows of a piece of flat netting, as described before.

Bag nets.—It is obvious that if either the top or bottom row of meshes in a cylindrical net be tied in with a cord, a bag will be formed, and in this way cabbage nets and other bags are frequently made. The plan is not desirable for minnow or landing nets, as from the puckering of the meshes at the bottom of the net it offers too much resistance to be quickly raised through the water.

Casting nets.—To make a casting-net 16yds. round the tuck, thirteen different-sized spools are required; a smaller number may be used, but the net will not spread so uniformly as when made with the larger number. The largest of these spools should measure 4½in. round, and they should gradually lessen by ⅛in. As the larger of these spools will be over 2in. across they will be found much more convenient if made of the shape shown in the woodcut, the part cut out being grasped between the thumb and bottom joint of the forefinger of the left hand.

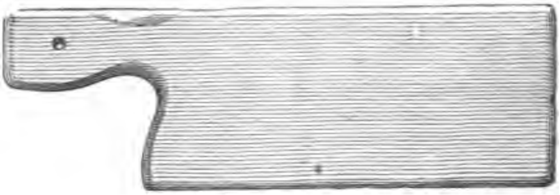


Fig. 8.

With the largest spool net a circle of eighty loops.

With the same spool net ten rounds, widening by putting in a false loop every four meshes.

With the second spool net six rounds, widening every five meshes.

With the third spool six rounds, widening every six meshes.

With the fourth spool four rounds, widening every seven meshes.

With the fifth spool eight rounds, widening every five meshes.

With the sixth spool eight rounds, widening every six meshes.

With the seventh spool eight rounds, widening every seven meshes.

With the eighth spool six rounds, widening every eight meshes.

With the ninth spool four rounds, widening every nine meshes.

With the tenth spool four rounds, widening every ten meshes.

With the eleventh spool two rounds, widening every eleven meshes.

With the twelfth spool two rounds, widening every six meshes.

With the thirteenth spool two rounds, widening every seven meshes.

Then net two plain rounds, and then two rounds with stouter or double string, from which the tuck is to be suspended. About fifty rounds for the tuck completes the net.

The leads should be small and nearly round, long leads being apt to slip through the meshes and get entangled. These leads should be threaded on stout twine, and sewn at regular distances along the margin of the net. The tuck should now be looped up inside all round to the row netted with stouter cord, so as to form the pocket of the net.

Conical nets.—Are exceedingly useful for many purposes. Minnow nets, wanders, and landing nets should all be made on this principle. A small square of diamond-meshed netting is first made, say ten rows of ten loops in a row; this done, the foundation-cord is fastened to the central mesh of the square, which is then netted round and round. The corners are rather awkward to manage at first, and with strong cord and large meshes it will be found the best plan to cut the corner meshes of the square, and tie them again so as to diminish their size. It is desirable not to make the square too large, as the net can alway be increased by putting in false loops where requisite, but this should be done at regular intervals in the circles, so that they come over one another and form lines down the net. It is obvious that nets of any required degree of depth can be made in this way. A landing-net requires to be deep to prevent the escape of the fish; a hooped minnow net, on the contrary, should be much shallower, not hanging down more than 6in. below the wire hoop to which it is suspended, and the meshes should be strained open, so as to offer as little resistance as possible to its being pulled up rapidly through the water.

A larger net, made and used on precisely the same principle as a minnow net, I have frequently seen employed in the canals in Holland. The net is from six to seven feet across, and is bound by a strong but thin cord. This has four eyes, which receive the ends of two hazel rods, each bent into a semicircle. These are tied together at the middle, where they arch over the net, and are then suspended from a pole. These nets are let down into the muddy water of the canals, and, being suddenly drawn up, bring up all fish over them. If used from the shore the net is swung round over the land, but if suspended by a cord from a pole projecting over the stern of a boat, the fish are scooped out by means of a small long-handled landing-net.

Trammel or flue nets.—The trammel or flue is a very effective net when used in appropriate situations. It consists essentially of three parts or layers, the two outer constituting the *walling*, the inner being termed the *sheeting*, or sometimes the *lint*. The walling, as shown in the engraving,

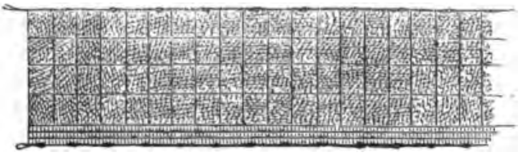


Fig. 9.

is formed of very large meshes, varying from six to twelve, or even more, inches square, according to the size of the fish to be taken. It is very desirable to net the walling with square and not diamond meshes.

The sheeting is usually made of small diamond meshes. It must be made so as to be at least twice the length and twice the breadth of the walling, and some makers prefer to make it twice and a quarter the length and breadth. Thus, supposing the walling to be twenty yards long, the sheeting, if diamond-meshed, would measure, when stretched lengthways, forty-five yards; and if the depth of the walling is six yards, it would stretch thirteen and a half before gearing. When the fish are very large, even this proportion may be exceeded with advantage.

The sheeting should be made of fine string, as when a fish has pushed it through a mesh of the walling, and got caught in the purse formed by the sheeting, he has not much power of exercising his strength. Light silk is the best material, but its cost is greatly against its use, although from its greater strength, lightness, and durability, it is not so expensive as it may appear at first sight.

If a trammel is used in shallow water, where the bottom is stony, its wear will be much lessened by having an addition made below the walling, as shown in the woodcut. This may either be a slip of square-meshed netting of stronger string than the sheeting, or it may be a continuation of the sheeting.

In gearing a trammel two modes may be adopted. A strong string may be run through the top and bottom meshes of the sheeting, and then, with some thin string wound round on a netting-needle, the sheeting may be tied to this cord every ten or twelve meshes, taking care to pucker it into one-half or to four-ninths its full length, according as the sheeting is two or two-and-a-quarter times longer than the walling. This gathering on a cord greatly facilitates the gearing, because no subsequent counting of the meshes is required, all that is necessary being that the cords and top and bottom of the walling be tied together at short intervals.

The Rev. Mr. Bathurst recommends laying one walling on smooth turf or grass, and securing the corners by pegs; then the sheeting, having previously had a stout cord run through its marginal meshes, is to be laid on the walling, and lastly the other walling on the sheeting. A stout cord, with flat corks two-and-a-half inches in diameter by half-an-inch thick threaded on it, is laid along the upper margin of the net and the margins of both wallings; then the cord on which the sheeting is stretched, the margins of the wallings, and the cork cord, are all tied together at regular distances, the floats being about six inches apart. The sides are fastened without corks, and the bottom line has leads instead of corks.

Trammels are worked down-stream, or they are drawn in still water.

When used in this way, a staff or rod should be placed down each side and the hauling-cord so fastened that the lead-line is as forward as the cork-line when the net is drawn.

Mr. Every recommends, when the water is not too deep, that the ends of the lead line be fastened to the feet of two persons who take the cork line over their shoulders, and, each walking in the water close to the bank, go down stream, and thus prevent the fish escaping by passing between the ends of the net and the bank.

In drawing a trammel to shore, the lead-line should be in advance.

Where trammels are used from a boat, one end is taken in first, and the fish extracted from the purses as the net is hauled in.

Trammels are often used with advantage by setting them round bushes or other harbours for fish, which are then driven out, and rushing away, get caught in the purses.

NETTING, TO PREVENT.

Half fill some old casks with brickbats. Drive into the sides of the casks plenty of tenter-hooks. Sink them in the water to be preserved.

The following plan is a good one to entangle a fishing-net: Waste iron wire, cut short, and folded into loose balls; but it would be too difficult and expensive to get for large operations. Heavy roots of trees, with plenty of root and a few tenter-hooks in the stump, are very good; or the heads of trees. Though the bottom is rock or stone, perhaps the foot of the banks would admit stakes to be driven in horizontally under water. Hurdles or crossed wood, with nails and hooks in, are good if sunk.

Again: Stretch strong copper or galvanised iron-wire from stakes in all directions (the stakes are under water), fixing it to the top of each with a small staple. With this simple maze of wire, no net can be got to the bottom.

The following is a capital temporary plan: Tie a bunch of dead thorn-sticks loosely together about the size of a moderate gooseberry bush, and sink it in the pool by fastening to it a stone just sufficiently heavy to keep it at the bottom. When a net is put into the pool, and dragged along, the thorns, from being so nearly the same gravity as the water, move before the net, and get so thoroughly entangled in its meshes as to require daylight to disentangle them.

The following will answer in shallow streams: Get some large flat stones and twist some pieces of common paling wire round them, leaving the ends projecting some way.

An old wheel with plenty of hooks in it is also a good plan.

Again: Fill some barrels with large stones and run ballast and gravel between them, and pour thin liquid cement into the cask until it is full. This will in time bind the mass firmly together, so that when the staves rot away in the course of years the concreted mass remains an obstruction. The barrel should, however, be well bound round with iron hooping, and it will last for years.

Again: In each pool let one or more triangular pyramids of stone, about half a yard measurement on each side, be cast in. This will be found preferable to staking the pools, for there will not be any enhanced danger to fair anglers' tackle. The stones must be chiselled roughly on each side, so as not to present any projection against which a rope or chain can catch. The effect will be that, when cast in, each stone must lie as a pyramid, and raise any net passed over it.

Again: Procure some empty flour or butter casks, fill them with stones, earth, or other rubbish, then get two pieces of board about a foot long, and nail them firmly across the middle of the cask (opposite each other); then drive tenterhooks all over at intervals of a few inches, and sink the tub in the pool. No person that has not had the misfortune to catch one of these strange fish can have the least idea of their destructiveness. Upon being first caught they will make a quarter turn-over, lifting the lead-line, and allow the fish to escape, and it is impossible to release the net without drawing the cask on shore, which would be difficult, as its weight would be about one and a half or two hundredweight, with the cross-pieces acting as anchors.

Again: To prevent pike and other fish being netted, place large rough stones at intervals about the bottom, not too close to each other, but so that the fish may lie between them when the net is thrown or dragged over their heads; or to prevent the sweep of a drag-net, cut holes about three feet square and three feet deep into the side of the bank; and to keep the earth from falling in, bank the sides up with planks, stakes, or faggots. This latter precaution can only be used when the water can be let off, so as to admit of the process.

TANNING OF.

For a net of 24lb. weight, previously untanned, take 4lb. of pulverised catechu, and boil it until thoroughly dissolved in 18 gallons of water, adding thereto, if procurable, about two hatfuls of young oak bark, pounded small, and either put the net into the boiler, leaving it to steep two days and nights, or into a barrel, and pour the hot liquid over it. If the net be put in the boiler, it should be quite covered with the liquid, or the hot metal may scorch it. The price of catechu is about fivepence per pound, and it is often used without any admixture of oak-bark. Catechu can be obtained from ship-chandlers in the chief ports of the kingdom. The boiler should be one of copper, or if of iron galvanized, to avoid rust. For a net previously tanned use a pound less catechu. Some of the Cornish fishermen pour out their tanning liquor into large vats with coal tar, and this ingredient is found to preserve the nets much longer when added to the liquor. A larger proportion of catechu is recommended for lines than nets; for lines, being more tightly laid up than the twines with which nets are made, are not so pervious to the liquor.

Instead of bark or catechu, alum is sometimes made use of. It does not answer very well for preserving, but it does not darken the nets, and it is said that these white nets will catch more fish than the dark ones, being much more imperceptible. Coal tar, such as may be procured at any gas-work, is now often used. The mode of applying it is to coil the net over a pole, make the tar very hot, dip in the net for half a minute, and when taken out pass another pole through the coil; and two persons can wring it until all superfluous tar is pressed out, and those parts of the net which have escaped saturation in the dipping, will receive it through the squeezing; tar will not do for scringe, splash, haul, or any nets which come much in contact with, or are drawn along the bottom; the reason is obvious—the tar on the lower part of these nets will get sooner worn off than on the upper, and to renew it on the one part would thicken the other, so as to render the net useless.

Another plan for landing nets is, when the net is perfectly dry to steep it in boiled linseed oil for an hour or two, squeeze it lightly, and then put it on the ring, with a weight attached to the bottom to stretch it, and when dried in the sun it will be perfectly waterproof; repeat the process if deemed necessary.

PONDS AND STREAMS.

BOLTS FOR PONDS.

Get a cast-iron tube, say sixteen inches in diameter. Look at a common clay tobacco-pipe, and suppose the stem of the pipe to be of the same diameter as the bowl, or head of the pipe; then suppose a door of iron or valve large enough to cover the top of the bowl of the pipe. Let this door or valve be hung on very strong hinges, or as a gate is usually hung; and mind, when the pipe or tube is cast, that this door or valve is made to lie flush with the top of the tube. Then have a very strong staple let through the valve, with nuts and screws, and fastened on the under side of the valve; then let a good strong chain be fastened by one end to this staple and the other to a roller in a frame on the top of the bank of the fishpond; let there be holes in this roller to admit of handspikes to raise or lower the valve when wanted. The tube must be laid through the bank and well puddled in. Elm planks three inches thick instead of iron with valve and chain, for the iron pipe, answer very well The door or valve should be lined with leather; guttapercha does not answer.

Slide-valves on a larger scale are generally used for the discharge of water from lochs or reservoirs; they are also made of iron, and work up and down like the sash of a window.

Again: Lay a cast-iron pipe through the seat of the embankment, and at the foot of the outer slope insert a stop-cock of the form and make of those used in large towns for the supply of water; they are made of iron, and screw up and down in a frame, the faces being lined with brass.

FEEDING FISH IN PONDS.

Carrion suspended in a net over a pond will give a supply of gentles for the carp, roach, &c. They will not, however, thrive very brilliantly on this. Perch will not do at all on this food. The best way to give a good supply of food for fish of all kinds is to empty the pond once in three years, or whenever the fish are getting poor, and then remove the soil, thereby exposing a fresh surface, and securing a good supply of insect food for the fish.

PERCH IN, TO DESTROY.

If the pond is not very large there would be little difficulty in getting rid of the perch, or at all events bringing them down to a minimum, by a little perseverance. Cut a number of withy wands, and fit up the same number of lines (they may be made with common pack-thread, a small phial cork, and a common perch hook); bait these with minnows, or the stickleback divested of his dorsal prickle, and stick the ends of the wands all round the ponds. Leave them for a time, visiting the pond occasionally to take off the perch and rebait. If the perch are on the feed, a large proportion of the fish may be taken the first day; but if the plan is continued from day to day, the takes will be found rapidly to diminish. Unless the drug *cocculus indicus* is mixed with some bait, say vermilion paste, made up by the finger and thumb into elongated worm-like pellets, it would require an immense quantity to act in the water, and the probability is that its effect would last for a long while. With a white paste thus prepared, roach are turned up in immense quantities, and they come to the surface swimming round and round in giddy circles, and may then be taken with a landing net, or even drawn to shore with a stick.

SHELTER FOR FISH.

Trout and all other fish require places where they can run for shelter. Without these no stream can be worth much. Nature generally supplies this by means of large stones, hollow banks, tree roots, &c.; but where these have been removed, or are absent from natural causes, artificial shelter must be erected. The following plan was adopted by the advice of Mr. Francis Francis for a shallow stream: "At every available point, to lay three fir poles across the stream, placing them parallel to one another, and about a foot apart, fixing them by driving stakes on each side, and here and there interweaving bushes. These would raise the water some inches for a distance above, and form a hide for the fish. In the middle the poles were to be cut, to leave a gap about two feet wide, and through this the greater part of the stream would rush. A couple of men with spades were to hollow out the gravel under (and for a few yards below) each obstruction, and to throw it to each bank to help to narrow the stream somewhat. Thus a tolerable depth of basin, with a rattling stream in the centre, and broken water over the poles, underneath which was a capital hide for the fish, would be obtained. In the centre of every little pool a large root of an old pollard was to be tumbled, partly to prevent netting, and partly to form a refuge." In mill streams, where the millers are anxious about their supply of water, the same authority recommends the following plan:—"Get some square boards, say about four or five feet square, pretty stout and well banded together; on the under side at each corner must be fixed an iron-barbed pin of a foot or so long; level and prepare a place on the shallows to receive the frame. Then fit it to the spot prepared, and drive the pins home. You then get a large flat board pinned to the bottom of the river like a flooring. Now take a long-handled spade, and go to the lower or down-stream end, and begin to hook and hollow out the gravel under the board, and so keep working it out until you have excavated from under the board enough to form a safe hide. Now under this the fish can shelter to any extent, and if it were thought that one means of exit were too few, places could be made at the sides." Another plan is, to lay down in the stream 4in. to 5in. drain pipes, with a single wire across the mouth of each.

Salmon casts are much improved by sinking wooden frames or cradles in the stream and packing them full of large stones, so as to form a large artificial rock, over which the water falling in high floods excavates a hole below in which the salmon rest.

STOCKING A POND WITH TROUT.

Presuming a small stream runs through it, make it shallow at one part. The bottom should be of rough gravel. If the pool is an old one, twenty-five to forty brace is a good number to put in. They should be of uniform size, and if possible should be placed in the pond at the same time. The smaller the trout the better. If the pool is an old one, the trout will not require feeding. If it is a newly-made pond fewer trout should be placed in it. The best food is the fresh-water shrimp, which will breed in the pond if once placed there. Shade is not necessary, but a few bushes growing by the side of the pool would increase the comfort as well as the food of the occupants. Trout may be fed with worms, which may be gathered by night from the lawn with the aid of a lantern.

After the pond is stocked, it should not be disturbed for three years, by which time the fish ought to have reached a good size, and should weigh from two to three pounds each. The pool should be well staked, to prevent netting. They will not be easily caught with the hook and line, and care should be taken that the pond cannot be easily drawn by raising the hatches.

Much depends upon the nature of the soil and subsoil. In clay districts, trout in pools frequently do well. And this they will continue to do until an accumulation of weeds and mud puts a stop to this favourable process. Pools containing trout should be cleared out every three or four years, and more frequently than this where they are surrounded by trees; and the longer a pool can be allowed to remain dry after it has been cleared, the better will the fish thrive when it is re-stocked.

There is no more suitable food than wasp-grub, well-cleaned gentles, and common worms.

Grow the alder-bush on the bank of the pool. A few bushes will be sufficient. This tree is also productive of different kinds of insects, which the trout feed on freely—the alder-fly and orl. Worms taken from old manure are excellent food for trout.

Turn minnows and caddis bait into the stream, and make them a small pool above the grate or wire netting, otherwise their lives will be brief. It would be advisable to cover the stream at the grating with a flag or two, and underneath them to hang a piece of carrion to get fly-blown, and also to feed the fish with grains, greaves, and scraps of animal matter.

The pool requires some shallower places; gravel beds for the trout, upon which they may free themselves from vermin, &c.; and plenty of flags or reeds sown in the shallows. A few deep holes would be of use.

Portugal laurels should be placed in two or three places, although dead leaves are detrimental; and possibly a few willow stakes, driven in and sawed off below water, might grow. The greater the depth of the water the more even will be its temperature. The sides ought to be the deepest parts of the pool, and, in winter, the ice must be broken to enable the fish to breathe. The banks should be cut sharply under to the depth of eighteen inches, and at the head of the pond lay down two larch poles lengthways in the pool, and across them deal planks nailed down. On these boards throw a few cartloads of gravel.

Another plan of stocking a pond through which a brook runs is the following: The spawning brook should be made serpentine, and deep enough to afford shade, cut under, say nine inches at bottom to six at top, with sufficient incline to give a gentle stream. At a distance not less than twenty yards from the lake, and as much greater as you please, construct, in the bed of the brook, a small pool, say twelve or fifteen feet square, and three or four feet deep, to form a temporary store, and a point of diversion for the water. Near the bottom of this pool insert a pipe from one to three inches in diameter, according to the computed capacity of the stream, so that in all weathers the flow through this pipe may be as equable as possible. From this pipe cut an artificial channel from eighteen inches to three feet wide, according to the quantity of water supplied, and let this terminate in the lake. This artificial channel must be filled to the depth of six inches with clean moderate-sized gravel, and so constructed that there will be an average depth of about three inches of water for the fish to breed in. It would be well if a few small pools were constructed at intervals along the artificial channel, so as to give shelter and retirement to the trout. A grate should be placed at the top, and another at the bottom of the artificial channel to prevent the escape of the fish. Now take ten or a dozen pairs of good-sized trout (say about half a pound each), and put them in this artificial channel, and the work is done. In due time they will deposit their ova. As soon as the trout have finished spawning, remove them. On no account put them in the lake. If your experiment has been carefully conducted, you may expect from one thousand to five thousand young fish in the following spring. Remove the lower grate from the artificial channel, and let the youngsters have free access to the lake.

STOCKING OF, WITH OTHER FISH.

Take about the end of April or the beginning of May, the root of a willow that stands near the water-side, and is full of fibres; wash the earth about it clean away, then tie it to a spike, which drive into a river or fish pond that is well stored with variety of fish. They will presently strike about and against the root, and void their spawn or roe, which will hang to the fibres. After a few days take the spike with the willow root out of that river or pend, and convey it to that which you design to store, driving it about a hand's breadth under the surface of the water. Be careful that you leave the root not too long in the first pond or river, lest the heat of the sun animate the spawn, and so it disengages from the root.

STOCKING A STREAM WITH TROUT.

In many rivers, if you will attend to your trout spawning-beds, keep people from disturbing the fish when on the rid, and give the roach and dace, if you are so unfortunate as to have any, a good dose of egg-like pellets of honey, flour, white of egg, and strychnine (or *Cocculus Indicus*, its matrix), before they have time to destroy the spawn, you may then save yourself the trouble of procuring impregnated ova, and of watching a hatching establishment.

Trout always run up to the head waters of a river to spawn. For hatching-bed, therefore, select a run coming from a spring into the river. Cover the bottom of this run for about thirty feet with sifted and washed pebbles the size of peas, and dam up the water so as to keep an uniform depth of about three or four inches. Immediately below this incubator dig a store pond for trout to drop down to, and take especial pains to exclude eels, ducks, water-ouzels, and everything hostile to the infant fish, by means of a high post and rail and brush-fence, with wire netting over the hatching-bed, and a grating at the foot of the pond. The ova should be spread thinly over the gravel, the eggs resting between the stones, so as not to be washed out by the run of water, and at the same time to admit of the young fish wriggling out when hatched. As soon as the majority of young fish have dropped down into the store-pond, it is time to make preparations for feeding them, which after a time they will require. Liver, fine red worms, and shelled caddis, chopped very fine in a sausage-cutting machine, is the best food. This should be scattered sparingly over the pool, and the growth of the young fish and the quantity of food they require should be noted, in order to regulate the supply. Towards autumn it becomes a question of whether you shall turn your fish into the river, or keep them till spring; this must depend on the liability of the stream to scouring floods, and the number of enemies in the shape of predatory fish who will eat up nearly all your young fish before spring. In this case keep your young trout till April, and feed them well throughout the winter. In April they must take their chance in the river.

When there, you must still keep them supplied with food. A large tub filled with clean moss can be kept charged with dew-worms. When well scoured, it is astonishing the quantity a single trout will eat. If trout of a large size are particularly required, you must give the fish a good supply of food, and it would be advisable to stock the stream with ova or trout from a different lake or river. A very moderate run of water is sufficient for the purpose of rearing and fattening a large stock of trout, provided there are plenty of deep pools and safe holts; but constant food is as necessary to them as it is to poultry. Of course the larger the space you give trout to feed in, and the greater the extent of food-breeding water you give them the command of the less necessity you have to feed artificially.

RODS.

PRESERVATION OF.

As regards the preservation of fishing-rods, some anglers use boiled linseed oil, but it is stated that it makes the rod lose its springiness.

Apply the unctuous fat of the heron to the joints of your rods; when well and frequently rubbed into the grain of the wood it will answer the purpose. Use the yellow fat, which is to be found lining the membranous regions of the thorax. The same will be found to be of more consistence in its nature than goose or fowl grease.

ROD FITTINGS, TO BRONZE.

Rub off all the lacquer from the brass, and apply chemical bronze to the part requiring bronzing. When dry, re-lacquer.

ROD JOINTS, TO FASTEN TOGETHER WHEN FISHING.

Small india-rubber rings passed over the brass loops will answer the same purpose as silk, with far less trouble.

TO COLOUR FISHING-RODS LIKE MAHOGANY.

Take ½lb. logwood chips and 2 quarts of rain-water, put them into a clean pan of any kind, and simmer down to one third the quantity. The rod to be stained must be quite clean and free from grease; the liquor to be put on boiling hot, with a new, clean paint-brush. You may make the colour as deep as you please by repeating the stain. Each coat of stain must be dry before doing so, and also rubbed down quite smooth with fine sand-paper. After staining, give the rods two coats of naptha varnish; the second coat must not be applied until the first coat is quite dry, which will be in about half an hour. They must not be placed too near the fire. Most druggists keep the varnish.

VARNISH FOR FISHING-RODS, &c.

First clean the rods thoroughly with spirits of turpentine, and afterwards rub down with fine glass paper. This must be done before applying any varnish. Japanners' gold size is a very good varnish for rods, price about twelve shillings per gallon. The time of drying varies, some taking three hours to harden. This is perhaps the best. The varnish may be applied by a painter's quill tool or fitch.

Some use a varnish made of gum shellac and spirits of wine, made the consistency of ordinary varnish, and a piece of cobbler's wax about the size of a walnut added to a gill of the mixture. The varnish should be lightly rubbed over the rod once a day for six consecutive days, and in a day or two afterwards it will be ready for use. No French polish or boiled oil should ever be put on a rod, as the latter causes it to lose its "springiness," and the former, after a day or two's usage, invariably makes the rod look unsightly, from its liability to be scratched and from the polish cracking.

WADING BOOTS.

TO DRY.

Fill the lower half of the boots with baked beans or oats, or, failing these, even with small heated pebbles, as soon as they are taken off after wading. The upper part of the boots should be turned down.

Again: Invariably turn wading boots inside out as soon as taken off, and hang them in a dry place, exposed to the sun or wind. The damp, caused by the perspiration from exercise, will be materially lessened. Walk in them as little as possible.

WADING BOOTS OR STOCKING, TO MEND.

Get two-pennyworth of good india-rubber, and cut with a wet knife into pieces the size of horse-beans, put it into a common pickle jar, then add three or four ounces of coal-tar naptha, cork up, and shake once or twice a day for a few days, when it will be ready for use; if it gets too thick, add more naptha. Now procure some thin sheet india-rubber, and cutting off as much as is required, paint the patch and stocking with the dissolved india-rubber; let them stand a few minutes, until they feel sticky, then put the patch on the stocking, place a weight on it for a few hours, and it will be finished. Buy at the shop where you obtain the stockings a small tin box of solution. Take a piece of the material of which the stockings are made, and with the finger rub sundry coats of the solution into it until it will absorb no more, and a slight skin is formed. Then, with a pair of scissors, cut a portion of the material thus treated in a circular form, and of a size sufficient to cover the hole and the worn part around it; a patch an inch or an inch and a half in diameter will suffice in most cases. Rub a little of the solution over the part of the stocking to be covered by the patch, which then apply after the manner of sticking-plaister, pressing it closely down. Then place a weight on it, and leave it to dry, which it ought to do in twenty-four hours.

WAX.

WAX, TO MAKE.

To 2 ounces of best yellow resin in powder add one drachm of white beeswax sliced in minute pieces; put in a small jar or pipkin, which place in a saucepan of boiling water, taking care the water is so shallow as not to mix with the resin and wax (or the jar may be placed on the side-piece of a grate); with a bit of stick, stir till the resin and wax are dissolved perfectly; then add 2½ drachms best fresh lard, and let the whole simmer for ten minutes, stirring often; pour into a clean basin of cold water, and whilst warm pull the wax and knead with the fingers till nearly cold, to give it toughness. Make into small balls, which place on a piece of window glass in a small box, to keep from dust; to be kept in a cellar or cool place.

Likewise: A solution of wax in spirits of wine—one ounce broken in small pieces to half an ounce of spirits, kept closely corked in a wide-mouthed bottle; it is admirably adapted for fine glover's silk.

Also: Tallow resin 23 drachms, beeswax 13 drachms, and prepared suet 2½ drachms; melt together.

Or, shoemakers' wax, dissolved in spirits of wine until about the consistency of butter. To use it, put a small piece on the inside of a kid glove and draw the silk lightly through it; after this draw the silk through another piece of clean leather, to take off the superfluous wax. To dissolve the wax, put a small piece into a gallipot, with a very little spirits of wine, and tie a piece of bladder over the mouth of the gallipot. Then put the gallipot in a cup of warm water, and set the cup on a stove (not too hot) or near the fire, until the wax is dissolved. You should keep the bladder tied on when you are not using it. If by standing the wax should become too hard, place the gallipot in a saucer of hot water for a time.

SHOOTING.

BIRDS AND BEASTS

BADGERS.

Capture of.—Take the dogs in couples to the woods where badgers have their holes, and there fix sacks in the mouths of the holes, the bottom of the sacks being in the holes. This must be at twelve o'clock at night, when the badgers are out feeding. When the sacks are fixed, loose the dogs, which take the scent, and after a while turn the badger and drive him back, and presently he goes into the sack; you must then run from the nearest hiding place, and close the sack. If the sack is not a good one, the badger would go right through the bottom of it into the far end of the hole.

Steel traps, with not too strong a spring and without teeth, will capture the badger without injury. Another plan adopted by an old keeper was as follows: He used to go out after midnight, when the badgers were from home seeking food, and let slip his collie dog; when a brock was started Collie gave tongue, but instead of flying at the ear, attacked him in the rear; the time lost by turning round to retaliate enabled the man to come up, catch him by the tail, and bag him. Although very supple about the region of the neck, the back is the reverse; on account of which it is incapable of doing any injury when held out by the tail.

In Ireland they are sometimes caught thus: Ascertaining with the help of a terrier that a badger is in the burrow, clear away the rubbish from the principal entrance, and close every other outlet. Then build two side walls, 2ft. long and 9in. apart, closing the end with a large stone, and covering all with heavy flags. Leave a groove near the entrance to the burrow, and get a flag to fit into it, tie a strong cord to it, the other end of which fasten to a bit of stick (strewing a little straw over the flags and into the passage), and secure the bit of stick in such a manner that whatever animal pulls it will bring down the flag behind it in the groove, thus preventing its moving in any direction. It can be easily taken out by lifting one of the flags.

BLACKGAME.

Rearing of.—Young blackgame are reared by hand exactly like young pheasants—same treatment, same food. When able to fly, if you pull (not cut) the feathers out of one of the wings, and when they grow again long enough for a flight pull the feathers out of the other wing, you may leave them much longer unconfined. When confined they must have abundance of green food. Sorrel never comes amiss to most birds. and wild berries, whether grown on trees or on the ground, will be prized by them.

Again: Get a well-known good sitting hen with a good cluck, set her upon fifteen eggs. The eggs are more certain to come well out if they are taken three or four from different nests, than if a full nest be taken. The brood being hatched, place the coop and hen with her birds in a meadow where there is plenty of spret, rushes, &c., having a soft damp bottom and near a running streamlet or wet open drains, and in some quiet retired place; feed the hen and birds as you would chickens, changing the site of the coop five or ten yards every day. The young birds will do for themselves, feeding upon spret seeds, berries, and insects; the hen and coop must not be removed till they can fly well. The young birds will soon take to corn edges, hedge sides, and so forth, and if not disturbed will thrive well, and will remain on the muir side, taking care of themselves all the winter, and nest again in their old haunts in the meadows.

CROWS.

Call for.—See "Jays," and "Vermin Trapping" (section "Traps").

Trapping of.—The most destructive way of killing crows is by an egg poisoned with strychnine; but, as this is a most deadly poison, great caution must be used in setting the eggs.

A very effectual way of taking crows is by laying a lump of carrion in a shallow pool, and surrounding it by a number of the common rabbit traps.

If in the breeding season you find a crow's nest, wait till she sits deep, and then put her off as if by accident. If, however, you are a good shot, knock her over at once, but don't fire if you can't trust yourself, as, if missed, she will probably forsake. Assuming you have not shot at her, you must get up to the nest and pull out the undermost sticks, all but one or two, but being careful not to disturb the lining. Then stick a bit of white paper, the size of half-a-crown, in the middle of the space pulled away. Watch her on to the nest again, and send a charge of good strong shot at the paper, and you are sure to kill the carrion crow dead.

If creeping after one of these birds feeding in a large field, and you are behind a wall, but have to go along it to get opposite to where she is, take a turn of about fifty yards into the field you are in, and come up to the wall again at the place where you think the carrion crow is. By so doing, she does not see you passing the chinks in the wall. Having arrived at the wall, you must place your eye (for the purpose of reconnoitring) slowly to any small aperture you may find, and as slowly withdraw it when you have made your observations of her movements. If done quickly, she will catch sight of the break in the light, and be off. Now put the gun to your shoulder, pointing the piece parallel with the wall, and, rising suddenly, swing the gun over the wall and fire.

On the edge of a pool of water or rivulet, sloping into deeper water, let a trap be thus placed and baited. Take a common hen-egg, blow it, and fill it with soft earth. Insert a pin of wood by the side of the egg; thrust the other end of the pin into the bottom of the pool so deeply that the egg is just afloat with the water, at the distance of the trap's length from the brink. Set the trap end on the egg, covering it neatly with moss, so that the bird uses it as a bridge to reach the egg and gets trapped. Have the trap-chain long, and the bird is at once quietly drowned and disappears, however slightly caught, and thus does not alarm his friends and neighbours. Running vermin are also readily taken in a trap so set.

The very best bait for carrion crows and magpies is a hedgehog cut open and pinned down to the ground with a few light quick-striking traps round it, or else put on the top of a stone post and poisoned with strychnine.

CURLEW.

A good plan to get a shot at these wary birds is to lie down in some exposed place where they frequent, and, if you keep quiet, the natural curiosity of the bird will prompt him to come within shot. A hat stuck upon a stick near, and a dog "down charged" by it, are also very attractive to curlew.

GROUSE.

Rearing of.—Grouse may be reared in precisely the same way as black game. See "Blackgame."

Fresh heather is also an excellent thing for both, but with grouse omit the fruit and peas recommended for the blackgame, but adopt everything else. Never let any game in confinement sit on their own eggs; take them away as they are laid, leaving only a nest-egg to lay to, and let the eggs be hatched by a sufficiently large, but not too large, domestic hen.

Marking of.—Vulcanised indiarubber rings as used for marking poultry will do for grouse, &c.

Tie a piece of thin pliant wire round the leg of the grouse, just above the foot, so tight as to prevent its shifting needlessly to the annoyance of the bird, and, on the other hand, sufficiently loose to allow for the growth and expansion of the leg.

With sharp scissors cut through the web between the toes in either foot. This is the most durable mark, as it never grows together again, and is not conspicuous.

GUINEA-FOWL.

To rear wild.—If the eggs of a guinea-fowl are substituted for those of pheasants, the young birds will bo reared without difficulty, becoming as wild as the foster parents, and perfectly self-supporting. The following season they will breed freely, and there will be found no difficulty in establishing them as wild birds. They however fight with the pheasants, and succeed in driving them away to distant coverts. From their habit of running along the ground they do not afford much sport.

HARES.

A young hare may be known by the two sides of the lower jaw bending readily together; also by the firmness of the knee, when it is attempted to insinuate the finger and thumb *sideways* between the benes above and below. The buck has a rounder head, and is generally rather smaller and lighter than the doe.

Paunching hares, &c.—When a hare is intended for roasting for home consumption, apply the skene-dhu to his throat as you would to a deer, and then hold him up by the hind legs, that he may bleed freely. The result of this process is, that the shoulder becomes the most delicate part of the animal. The wild duck has often a muddy weedy taste, this is communicated to the bird merely from its having been allowed to cool with the contents of the stomach remaining in it. Even the wood pigeon becomes a good bird for the table if the crop be emptied the instant it is killed.

HAWKS.

Trapping of.—Take any tall tree (if partly decayed, so much the better), situated on high exposed ground; and, having cut off the top part of a bough, fix thereon a small circular steel-trap, with fine teeth, and without the long tail common to vermin traps of that class. Having countersunk it on the top of the branch, fix a field or common mouse on the flat iron of the trap, tying it thereto with a piece of string by the tail, so that it may just be able to move about without setting off the trap, and it will live for some hours.

The eagle may be rather out of place here among his smaller congeners; and it is enough to state that the best possible bait for him is a live white cat, pegged to the ground so that it may keep its legs moving, and so placed among three spring-traps as to render the capture of the eagle certain when he is striking and killing his quarry. The falcon may be taken in the same manner, using a live pigeon as bait. The sparrow-hawk and merlin may be taken with a piece of scarlet cloth fastened upon the plate or table of the common spring-trap, or a circular trap (best sizes five or six inches in diameter, with a spike to be driven into the top of a pole (and a chain and spike when used otherwise) placed upon the top of a stone or earthen hillock. The sparrow-hawk hunts over the same ground regularly, going his rounds so punctually that, where he is observed to-day he may confidently be looked for within ten minutes of the same hour to-morrow. Let the trap, baited with red cloth, be placed as above, and he is sure to strike at it.

Another plan is to place on an exposed situation a common wire-cage, containing several live larks or other birds, with well-limed twigs on and around the cage. The falcon, sparrow-hawk, and merlin are sure to make a dash at a cage so situated, and get limed.

If you can meet with a bird partly devoured—which is often the case along hedgerows or on the outskirts of woods, and generally the work of the sparrow-hawk—place a common rat-trap, and secure to the trigger the remnants of the bird, binding the teeth of the trap with hemp or wadding to prevent the legs of the bird being injured. Secure the trap well from view with the feathers of the bird; and, if not sufficient bo left, shoot a bird resembling as nearly as possible the one killed by the hawk.

To take the buzzard, ringtail, and hen-harrier, let it be observed that these birds are best taken with a dead bait, and that nothing is better than a rabbit or hare. The mode of trapping lies in the fact that they light upon an elevated spot near the bait, to reconnoitre, as it were, before proceeding to feed upon it. Let their hunting-ground be observed, and where no natural hillocks or large stones are found, let the trapper proceed to throw up earthen hillocks, or small cairns of stones; or where wood is to be got handy, let him drive in poles of five to six inches in diameter, height from three to six feet, with a flat top. Upon these let him place some common moss, and leave them for a few days, until the birds have become accustomed to see, and perhaps light upon these new objects. Then let him place his traps upon them, layihg within the distance of a few feet his bait, so that it may be easily seen by the hawk flying over, which will then alight upon the nearest elevation where the trap is, and be taken. The jaws of all traps should be smooth, without teeth, and should not come quite close together, but have a little space between, by which means the limb caught is prevented from being cut off altogether; and the whole must also be so covered with moss that the hillocks and poles may present the same appearance as they did before the traps were put down. There is no rule for the distance from one another at which the traps should be placed. Much depends upon the nature of the ground: but they need not at all events be within a quarter of a mile of each other, and of course may be much farther separate on wild uncultivated ground.

Another plan is the following: A frame-work is constructed, wider at the top than at the bottom; the bottom is solid; the sides are covered with netting; a false bottom of netting is fixed about a foot above the true one. At the top of the frame-work is a piece of netting large enough to close up the opening; it runs freely on rings, working on pieces of stout iron wire; and is made to close by a suspended weight. To set the trap, the top netting is drawn to one side, and kept so by a catch, retained by a treadle, which is placed in the trap immediately above the false bottom. A living white pigeon, with food and water, is then placed beneath the false bottom. When the hawk gets above the trap he sees the pigeon, and, descending, strikes the treadle and loosens the catch; the netting, being then released, is instantly drawn over the top of the trap by the suspended weight, and the hawk is secured without injury to the pigeon or itself. The trap is elevated on a stout pole eight or ten feet high, and is so placed amongst trees as to conceal the working parts and sides as much as possible.

HERONS.

They can be taken with common trimmers, baited with fish, such as are used for taking eels. The trimmers must be fastened very firmly to the side, and plenty of line must be given, so that the birds can eat the bait at their ease, or they will be alarmed.

Again: Procure two or three ordinary rabbit traps, or "gins," and set them where the water is about four or five inches deep, covering them when set, if the stream be sluggish, with some small pieces of any kind of water-weed; but if the stream be a rapid one (which would carry away the weeds), sink the trap in the stones at the bottom, and when the ring is withdrawn and the trap set, cover the spring of it with stones resembling the bottom of the brook as much as possible, and place some fine stones or shingle on the brink of the trap, placing stones all round the jaws, so as to let as little as possible be seen of it. If this fails, take a gun and "stalk," leading a quiet horse, not directly but gradually towards the bird. Another plan is, as a heron rises very slowly and generally in circles, to ride straight at him in a gallop, and when he rises pull up, dismount, and fire.

JAYS.

Call for.—Take a short pipe (a cutty is the best, as the end is small), place it just within the lips, and suck; you can regulate the tone with your finger at the top. Try to imitate a hare in a snare, and no call is so good. But you must be quiet and concealed.

On a tin whistle which is round, hollow, and perforated in the middle (it is sold at most toy shops), the facsimile of the cry of a rabbit can be made. This is a capital call for jays and other vermin. Jays may be easily shot in the winter by watching near bean-stacks, or carrion judiciously placed on trees. A dead sheep is the best.

LANDRAILS.

These birds have runs, but when disturbed will sometimes leave them and run "anywhere." Their runs are not made till the flower-stalk of the grass is beginning to show above the rest. In young corn, however (oats preferred), the runs are earlier. Thin binding-wire nooses, laid at the end of the runs, about the height of the feet, ought to prove the best snares, the birds being driven towards them about an hour before sunset, and disengaged as soon as possible. A bag should be ready to put them in, so as to then "try back" for others.

Or get a call. The best thing for this is an instrument made after the fashion of a watchman's rattle, but smaller; or a bone rubbed across another with notches in it will often answer the purpose. Take this and conceal yourself behind the hedge of a field where there is a landrail, and answer it when it calls. The bird will come by degrees towards the end of the field where you are, when you must keep a sharp look-out to shoot it when it lifts its head above the grass to look around, which it is sure to do. The afternoon or evening is the best time; and in the beginning of spring this plan nearly always succeeds. Another method is to let one person take a thick-leaved bough, and another a comb and piece of hard wood. When the bird's cry is heard, let the holder of the bough lie down, and let his companion imitate the landrail's cry by scraping the comb on the wood, retreating when the bird approaches, and thus luring him within reach of his ambushed companion.

LARKS.

Larks can be taken by hawking. The kestrel or the hobby is the bird used. She is belled, and, perched upon a cross-staff, is carried on the left side perpendicularly above the sportsman's head, who holds in his right hand a net in all respects like a fisherman's long-handled landing-net. The jingling of the kestrel's bells, and the bating and struggling to maintain her balance, as the man quarters a field where larks abound, so terrify the birds that they lie and suffer themselves to be covered with the net.

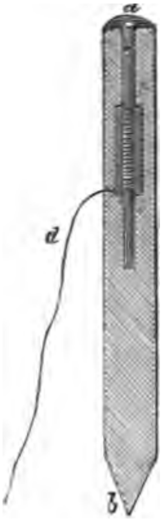
Larks may be taken by horsehair springes fastened at intervals of two or three feet to a long line pegged down at each end.

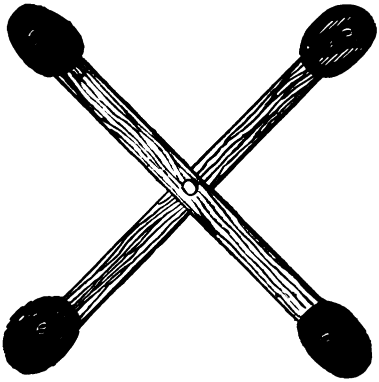
Another plan is take a long line well birdlimed, and two people, holding the two ends, to draw it along the field very gently. If it touches a lark, the birdlime secures it.

There are two other methods of lark catching. The first plan is by the ordinary clap-nets, aided by live larks in cages, and also attached to a lifting string between the nets. The second plan is carried out with a long net at night. The net is 30 feet long by 10 feet deep. A piece of fine whipcord, with the kink taken out, is fastened along the edge of the net, and four others at equal distances lengthwise below it, leaving a tail 2 feet to trail on the ground; loops are made at each end of the string, and a light fir pole, 9 feet long, is run through the loops at each end to carry it by. Having got your net, the first thing to do is to set off on a fine morning, and find a succession of moderate-sized grass fields, mixed up with arable land; examine them carefully to see if there are any droppings that will lead you to think that larks roost there at night. If you find little piles of droppings about the fields, make up your mind which fields you will net at night, and then carefully gather up every bit of stick, thistle, dock-stem, or in short, anything that may catch and hamper your net. When you have got your fields perfectly clear, select a calm night, and pop a dark lantern into your pocket. On entering the field you should turn your back to the hedge, give your companion the end of the net to carry out into the field, and, having stretched it out, let each insert his fir pole through the loops, draw them tight, and then lift the net off the ground to see that it is stretched tight and square. When that is done, let each take up his pole and tuck it under his arm, taking care that the tail of the net trails on the ground; by leaning gently away from each other the net is kept tight, and away you go down the field; wheel round the bottom, and up again, till you have covered the whole space. By stepping lightly and listening carefully, you will easily hear when a lark, disturbed by the tail of the net, flies up against the part over his head. Whoever hears the little flutter immediately claps the net down, giving it at the same time a gentle pull, which warns his companion to do the same; you then walk round to the back of the net, and look for some pieces of white tape which you have tied to the edge of the net to enable you to see it in the dark and avoid treading on it; walk till you think you are opposite the bird, and give the net a gentle pull; he will immediately flutter. You then put one arm under the net, the other over; take out the bird, give the net another pull to see if you have a second in, and then on again.

Again, a solid piece of soil (generally turf, in old stubbles) is cut out of the ground, about a foot in length, six inches or eight inches in breadth, and three inches thick. This is placed across the hole from which it is taken, so that the hollow below, with the soil placed over and across it, forms a short tunnel, with ingress or egress at each end. Below this—*i.e.*, in the hollow and under the sod—is placed a horsehair noose, secured by a peg; and a small cairn, of a dozen or so of small stones, is placed within a yard of the hole. It is the habit of the lark, as clouds are flying over, to seek shelter under stones, in short, wherever it can, from the storm which it thinks impending. Accordingly, alighting on the cairn, which first attracts the eye, it presently sees the hollow in the ground, and, running into it, is caught by the noose.

Larks can be shot in considerable numbers by means of a "lark turner." The instrument is made thus:—The upright (a b) is pointed at the lower end for sticking into the ground. It is bored partly down the centre to receive the spindle, c, and the middle of the bore is enlarged to permit the twisting round the spindle of the cord, d. A cross is to be made of two pieces, placed transversely and screwed to the top of the spindle. At each end of the cross is fixed a piece of looking-glass, e, e, e, e. These may be multiplied by the addition of one or more transverse pieces. To use it, let the upright be fixed in the ground, and one end of the cord being made fast to the spindle, which must be inserted in the hollow of the upright, the cord is then wound round the spindle, and the other end brought out throught a slit in the side of the upright; attach to this twenty or thirty yards more of cord, and station your attendant at that distance from the machine, with directions to him to pull and loose the cord, as though he were playing a child's windmill. As the machine twirls round, the light reflected from the mirrors attracts the larks, which will hover over it and offer an easy mark to the gunner.





MAGPIES.

See "Jays," "Vermin Trapping" (section "Traps").

Killing of.—Make a hole in either end of a hen's egg, and insert arsenic or strychnine into it, stirring it well. Close the hole up carefully with clay, and drop the eggs about in the haunts of the birds.

Again: Drive posts into the ground about two hundred yards apart, and about ten feet high, along the outside of the covert. Mortice out the top of the post to receive a round gin with the spring underneath. The gin must be fastened to the post by a small chain and staple. No bait is required.

Cut open a rabbit and sprinkle three or four grains of strychnine in the inside. Just before daybreak go to where the magpies roost and place the rabbit on any open piece of ground near, with the intestines exposed. Return often so as to remove the slain, since the victims are liable to kill any animal eating them.

Eggs are capital baits for magpies, carrion crows, &c., so also are mice. Select a steep bank or (in coverts) a particular shaped root of a tree to set the trap on. The object is to set the trap in such a position that the magpie must walk on to it to get at the egg or eggs. On banks take a narrow spade and cut a place in the bank the width of the trap (a common rat-trap is the best), and about a foot in length; place the trap in front and the egg or eggs at the back. The place cut in the bank should bevel a little, so that the birds can see the eggs better. The best spots for trapping are in narrow belts of plantation, or at the sides of streams and lakes: (*see* "Vermin Trapping," section "Traps.") A small piece of white paper pegged down outside the trap, serves to attract the birds. Carrion crows may be taken in the same manner.

Put on a lady's cloak and bonnet, keep the gun by your side with the muzzle down under the cloak, and then walk towards the bird in a circular direction with the eyes turned another way; the bird will allow the sportsman so dressed to get within shot. The same ruse holds good with golden plover.

During the nesting season take some one to put the magpie off, and, having taken up a position, you may have a tolerably good shot as she goes away. In larch plantations, in summer time, when the trees are pretty well out, many magpies may be killed by creeping after them. If you hear one chatter, run lightly towards the place, and *stop dead the moment he stops talking.* Wait till he "opens" again, and so on, till you get, as you may very often, within ten yards of the tree. Select the stem of the tree you believe him to be in, and follow it up with your eye by guess as well as you can: this will often discover him to you. The best way, after all, if you can manage to do it, is to call like a cat in a trap, and have a light-coloured cat at the same time tied in a tree near. Keep out of sight, and you will soon get a good many shots, especially if the magpies are *new* to it. Four or five guns in a plantation, at roosting-time, may have good sport. The magpies get confused by being driven about.

These birds are destroyed in summer by laying a dead bird out in a field, the gunner being in ambush.

A contributor to the *Field* advises that a cat be suspended in a cage in a wood where the magpies resort, and by waiting in ambush many may be killed.

OTTERS.

Trapping alive.—If the stream be a narrow one, by a wire fence put across it and a pit-fall trap built at one end, and then by a good high wattled fence for fifty yards on each side the stream, you might catch some otters. It would probably cost from seven to ten pounds; still it would last many years. The only way that you will ever get an otter into a box trap will be by making a fence across the river, so that the otters can only get up through the box trap.

PARTRIDGES.

Partridges require the same treatment as for pheasants, until half-grown; then put the coop, with the hen in it, at the edge of a wheat-field, and feed three times a day. A pair of barren birds will, perhaps, happily take charge of the young.

Should you wish to rear any number, the best plan is to select a Bantam hen for the hatching. When hatched out, put your Bantam hen in a coop; let the coop be low, to prevent her jumping up and down in anxiety when she sees the approach of food. Have a little open crate proceeding about five feet from each side of the front of the coop, and a foot high. Cover this with a net, or with wirework, to prevent the young from getting out, or vermin from coming in. The young birds should not be let loose till they are completely feathered, and are able to fly strongly. After this it is better to let them leave the hens when they like, that is, one or two at a time, taking care to place the hens near good ground.

As soon as partridges are hatched, some put them down to some other covey where the chicks are not too numerous. An old bird never refuses to acknowledge the intruders, though older or younger than her own.

Young partridges ought to be moved from the grass-field where they were originally placed as soon as they are a fortnight old, and distributed over the manor at the edge of the cornfields. The coveys must be kept well apart, or they will pack, and show little sport in the season. The best way to move them is to have a coop made for the purpose, with a bottom to it, and a flap in front. The hen may be transferred to it in the course of the day, and at night the flap may be shut, and the whole thing moved to the place intended, where another coop should be ready for them the next morning.

Food for.—The same as for pheasants, except that they must have, from the commencement, the eggs of small ants three times a day, immediately after the other food; if before, they will only eat the ants' eggs. The best food for young partridges consists of hard-boiled eggs chopped fine, ants' eggs, maggots, and tailing wheat. Their position wants changing a few yards daily whilst the hens remain in the coops. The hens should never be let out of the coops till the young birds are big and strong enough to follow her in wet and bad weather—mind themselves, in fact, a bit. Feed with maggots kept till they are dead and red in their chrysalis state, sparingly. Add to these *fine groats*, kneaded oatmeal, crumbs of bread, and boiled and minced rice. Give these sparingly, with crumbs of bread and a light sprinkling of black pepper, and powdered chalk with a little garlic chopped up in it, mixed together; change the food in its method of donation, and vary it as much as possible. If an inclination to scour shows itself, then give rue tea in place of their water, *but not strong*, and increase the chalk, varying the rue tea by giving them water with rusted iron in it. Partridges are fond of young snails and their eggs.

In carrying partridges to a distance, feed with buckwheat, scalded rice occasionally, a little dry linseed also, and, in fact, any seed or food to vary diet—highly important is pure water to birds and beasts whilst in confinement: Swedes are also very good; cut the bulb in half, and the birds will eat the centre.

Stock of, to increase.—Import a few brace of birds in February from a distance; they will breed and remain on the ground, if not disturbed.

Netting of, to prevent.—The best sort of bushes are old stunted tops of blackthorn hedges. They should be just sufficiently stuck into the ground to prevent the wind blowing them away, but not too firmly to prevent a net pulling them up, and allowing the bush to roll into the net. Any sort of briars or thorns will do. Should bushes not be readily procurable, the land may be staked, and for this purpose the tops of young Scotch firs are very good. They should be cut about eighteen inches long, and the small boughs cut off, leaving the hooks about five or six inches projecting. The stake should then be driven firmly into the ground, but in a slanting direction, so that cows, happening to lie down on one of them in the dark, do not hurt themselves, but break the stake off. These and the bushes must be looked to every day, to prevent their removal by poachers, as, if removed, they must be replaced with fresh ones. Should you find they have been all taken up in one or more of the fields, you may be pretty sure mischief is meant the same night.

As to the distance at which you should place the bushes, twenty yards apart and putting them zigzag will do. Put them on the tops of the land, as well as in the furrows. Bush (previous to the commencement of the partridge-netting season) all clover and grass fields with good stout stems (from four to six feet high) of hip-brier, gorse, or any of the most prickly plants or shrubs you can procure. If the bush wood be difficult to procure, place a less quantity upon your grass-lands, and throw loose a fair sprinkling of gooseberry cuttings, thorns, briers, or anything that may be both painful and difficult for the poacher to disentangle from his net; and as the season advances do the same with grounds on which birds will then begin to roost, viz., oat stubbles, clover leys, &c., &c.

Snaring of.—Mr. Francis Francis thus describes a method of capture adopted by a clever game thief, he says: "Some years ago I rented a tract of shooting in Buckinghamshire. A portion of it bordered upon some wildish down country. One day I was out shooting, and turned out of one of the fields to ascend a hill, which was a portion of one of these downs. My keeper was with me, and as I ascended the hill I came suddenly on a partridge lying dead, with its wings extended as if it had settled there and died in that position. I had shot at and lost a bird near the same spot some days previously, and I called to the keeper, "Why, George, here's the very bird I shot," &c., and while speaking I stooped down to lift it; but, to my surprise, in lifting it a sudden check made me aware that it was held by something, and, on looking closer, I found it had been snared by a fine single wire noose, which was secured in the usual way. So natural did everything look, that I could hardly realise the plan without close inspection, even when it was pointed out. The place was close to a long, straggling hedge, under the sunny side of which partridges were in the habit of dusting and playing. Round about the place were numbers of dwarf bushes, scraps of juniper, whitethorn, &c. By sticking a short bush in here and there, so as to fill up an occasional gap, or to cut off an open path, a regular maze had been constructed, to which various outlets had been left; but each of them was guarded by a fine single wire nooze. The birds settled near the dusting places, and when they began to run about, in and out of the bushes, some of them were pretty sure to come to grief."

PHEASANTS.

Pens.—The first thing to be done is to construct a pen about fifteen feet square in a quiet part of the covert. It may be made of wattled hurdles, galvanised iron netting attached to posts, or anything which will confine a hen pheasant and not exclude the air. There must be an entrance-door, which should lock; the walls should be about seven or eight feet in height, and the top entirely open. About ten or twelve tame hens should be caught early in the year, the feathers of one wing cut to prevent escape, and then turned into the pen and fed regularly, and a few faggots or bushes should be supplied to them for shelter. Some say that the hen pheasants should be in the pens by Christmas or before; they may be turned out in August and caught again; they will remain about a feeding-place in a covert. Five or less hens to one cock in a pen is enough. Feed the tame birds on strong food, Indian corn, barley, linseed meal, greaves, and swede turnips. The heartier they are the more they will lay. Beware of penning wild hens or tame ones very late in the season. As the breeding season approaches the wild cocks will visit these hens, and at the laying season they will drop their eggs about the pens, without attempting to make a nest. Each bird will in this manner lay forty or fifty eggs. The eggs almost invariably turn out good, as the companion of the hens is commonly the strongest and best cock in the wood, who will keep away the weaker ones from his harem. The eggs should be collected every morning by the feeder, and put under hens or turkeys, and the pen left as quiet as possible. About fifteen eggs are sufficient for a sitting.

Another plan.—Any building with a south frontage of 36ft., unoccupied, would be most desirable for a pheasantry, or along any high fence affording protection towards the north sufficient ground may be inclosed with 9-in. brickwork, 8ft. 10in. in height in front, with light iron or wire-work 4ft. 2in. fixed thereon for the accommodation of any reasonable number of birds; allowing the 36ft. from the brickwork in front in depth and 24ft. in width for every pen. The bottoms of the pens should be of good old turf, with laurels and evergreens grouped with a snowberry plant or two here and there. It will be desirable to cover the pens with coarse netting, to protect them from the incursions of cats; and to keep them in confinement. The younger they are in reason when the operation is performed the better. After carefully cutting the wing all round at the joint next to the one where cooks take it off when preparing a duck for roasting, the end of the wing desired to be removed can easily be wrenched off, and immediately afterwards use cold salt and water with a sponge, in any vessel large enough to hold a quart.

Pinioned pheasants will thrive in a walled-in kitchen-garden, and lay plenty of eggs, where cats cannot molest them; but winter greens and all other vegetables will be exposed to much injury by their presence.

Another plan.—For a cock and three hens, the laying pen should be from eighteen to twenty feet long by twelve wide. If there are bushes or brambles on the ground, no other covering is necessary for the birds to hide in or the hens to lay; if such a cover does not exist, a place should be hollowed out about six feet by two, shelving to a depth of four or five inches in the middle, and filled with dry sand. They dust themselves in it, and the hens lay their eggs there. A felled fir-tree should be thrown over the excavation, or a pole may be placed on two uprights

30in. from the ground, and bavins or faggots laid against it on each side, to afford them a covert or a hiding-place. The pen should be surrounded by hurdles, made of oak laths, 7ft. high, and nailed on cross-pieces at the top and bottom. The laths should be 1in. wide and 1in. apart, and care must be taken that they touch the ground everywhere. They are fastened to stout poles, securely driven into the earth. The hurdles may be made of any size, but are usually 6ft. long, with the exception of one, which is 3ft. less, in order to admit a door of that width, which, made of the same material, and in the same manner, is fastened to one of the posts, and shuts against another; for this reason, the door should always be in the corner of the pen.

Another plan.—Have the pheasants pinioned and kept in an inclosure of seven to ten acres. In March get them up into their pens, one cock to three hens. Change the cocks sometimes. Two and three-year old hens lay the most eggs, and begin to lay much earlier than young birds. Wild birds caught in January and February very often will not lay at all, and always very much fewer eggs than tame birds kept as stated. A wild cock is good, and a two-year cock better than a yearling bird. Persons breeding largely should have some Indian ring-necks; they are very handy, lay a great many eggs, and are quicker birds on the wing. The Bohemian pheasants lay a great many eggs, but are very tender, and difficult to bring up. A good plan is to put twelve faggots up in the centre of the pen, and the birds will run under them and lie quiet if anyone goes into them. The palings for a pheasantry cannot be too close, and then no vermin will get in. The best plan for pales is to get seventeen or eighteen-feet hop poles, saw them asunder with a circular saw, and put them up 8ft. high. Larch poles are good, and will last twenty years.

Again: Have a net large enough to inclose a space of ground fifteen feet square, thrown over some young fir trees about the same height, but supported by posts at the corners to keep it in shape; a portion is covered with thin board to allow the birds to have shelter from rain, and round the bottom there is boarding two feet high. The mesh of the net, of course, must be too small to allow a hen pheasant to get through. The spool upon which the net is made ought not to be more than two inches.

Again: Plant a few yew trees in an open space within a covert, top the young trees and the extremities of the branches once a year until the place becomes one mass of foliage. Dig a ditch round the place and fill it with water. Plant at a distance of 10 yards from the ditch a thick holly-hedge and keep it trimmed until it is impervious even to vermin. Have a door made in the fence with a movable plank across the ditch. Stake the place with stakes armed with tenter-hooks. No poacher will be able to do much mischief here.

Egg Hatching.—From the 10th to the 16th of April the hens commence laying. Those laid by wild birds are best. Those laid by tame birds are next best. Those conveyed from a distance worst. The two great points to be attended in hatching the eggs sucessfully are, first, not to shake them; and, secondly, to have hens ready to sit at the proper time, and accustomed to the locality for some weeks at least. Put the hens in boxes: a turf at the bottom, a little hay, fifteen eggs, the hen; or she should be set in a box without a bottom, so that the nest shall be on the ground, and the box should have a lid, that the hen may be shut in. The boxes should be 18in. high, and perforated to admit of ventilation. The hens must be let off to feed, and shut up again. Boxes are only necessary where a number of hens are set together. When the hens have sat for five or six days the eggs may be tried, and all which are not good removed, making up each hen's nest, and giving fresh eggs to those which may be left without any. Take her out every morning, put her in a coop, with barley-water and road-dust, with some wood-ashes; it cleans the hen of vermin, and she will sit quieter. Twenty-four days are required to hatch the eggs. Beware of a hatching-machine. Clear off all cats. A hutch-trap, a little valerian, a red herring, a sack, and a tub of water handy, will do it quietly.

Management of chicks.—Never remove your hens until the chicks are well nested, guarding the nest to keep any that may be hatched before the last chick is strong enough to leave the nest. Never take the first hatched from the hen: it is a wrong notion, nothing artificial is so beneficial and strengthening to a chick as the heat of the hen's body. Leave the young pheasants with their mother for twelve hours after hatching, without feeding. Then they should be placed with the hen in a coop on a grass-field (the open part of the coop being turned to the sun), and a small pen before the coop, that the young birds may not stray; in a few days they will know their mother, and the pen may be taken away. The bars of the coop should be wide enough to allow the chicks to pass freely through. Boards should be put around the space in which the young run, and a net thrown over the top.

The coops should be made of board, and whitewashed occasionally—the size about twenty-seven inches square, no bottom, about two feet high in front, and fifteen inches at the back, with a sloping roof of weather-boarding. There should be a small door at one side, large enough to admit a man's arm. The front should be merely protected by bars, which ought not to be much more than one and a half inches apart, or both hen and chicks are liable to be destroyed by hedgehogs, and other vermin. When the newly-hatched chicks are first put out, a movable frame in front of the coop is useful to prevent them from being lost in the grass; but after a day or two there will be no danger on that score.

Have your coops set on dry turf two or three days previous to your pheasants being hatched; it will save a little hurry when wanted; also it will keep the spot dry, that being so necessary the first shift from the nest. If your turf is not of a sandy nature sprinkle a handful of sand on where you intend to shift your coops. After a few days when the chicks recognise the hen's cluck, several coops may be safely placed together in the same grounds, and nothing is better than a garden full of gooseberry bushes, where they pick up a variety of insects. Rain is their destroyer; so that the coops should be thoroughly water-tight. Let the young birds and hen have road-dust to dust in. The field should be dressed over every winter from a mixture of earth and dung, and some lime or lime-ashes. Take care they are not let out in the morning, if there is a heavy dew on the grass until such time as the sun is well up, and the grass has got a little dry. They should be fed at first with hard-boiled eggs chopped small and ants' eggs (which should be procured in dry weather, otherwise the chicks will swallow the earth which adheres to the eggs, and become sickly). After a week or ten days, curds made with milk and alum and barley-meal may be mixed with the eggs, which will be good food for them until they get their tail feathers, when they may be considered safe, and fed with any grain. Some mix oatmeal and eggs together carefully, tie them up in a cloth, and boil them until hard; and this, broken up, makes excellent food. When the young ones are a fortnight or three weeks old, soaked bread or bruised barley soaked may be given, and soon afterwards whole barley; but ants' eggs and maggots should be continued even until the birds are turned into the woods. Always leave maggots in bran for twelve hours before giving them to the young birds. A mixture of barley meal, lard, or fresh common cheese, a little pepper, raisins, cut very small, boiled nettles, cabbage, or rice meal mixed with milk, is good food for a change. Custard is the best food for young game when ants' eggs cannot be obtained. This is made by beating together raw eggs with an equal amount of milk, and setting by stirring in a saucepan over the fire, or in a slack oven. When maggots cannot be got, boiled crackling forms an excellent substitute, well boiled and chopped small.

The following food, either singly or mixed, and given in as great variety as possible is good: Crushed wheat and young potatoes chopped fine, with a little boiled rice, all mixed together. Also groats, lettuces, Jerusalem artichokes (cut small), dough of oatmeal and water, barley meal, suet, greaves, onions, clovers, mustard and cress, and gentles. To procure the latter hang up flesh and cats over six inches of damp sand; remove the gentles into fresh sand twice until the black mark in them disappears: if given before they will kill your birds. Cats' gentles are small. Beware of stale eggs; if when boiled the outside of the yolk is blackish, there is danger. There is a little maggot found in horse and cow-dung, very good for young pheasants. Feed young birds every half-hour for the first three days after hey are born, afterwards feed every hour, gradually reducing the number of times to three a day Young pheasants and partridges do not require water until three weeks old, but if fed on balls the meal should be mixed with milk or water. When young pheasants are moulting, boiled rice, with a little pepper, is a good thing for them; everything must be of the best, and quite clean. Vegetables of all sorts, well boiled, are good; a little lean raw meat is always good, together with new cheese, buckwheat, barley meal, insects, and grass.

Mr. Douglas's plan is as follows: he says, "the principal food I give for the first fortnight is composed of eggs and new milk, made as follows: In proportions, one dozen of eggs, beaten up in a basin, added to half a pint of new milk; when the milk boils add the eggs, stirring over a slow fire for a shor period to thicken, when it will form a nice thick custard. This I give for the first three days; then I commence to add a little of the best oatmeal and any greens the garden can produce, finely chopped, for the next three or four days; after seven days I add to their diet a little kibbled wheat, being kiln-dried previous to kibbling, also split groats and bruised hempseed, occasionally a handful of millet-seed; taking care all their food is of the very best; also whatever feeding-dishes are used I scald in boiling water daily. The above food I use until about three weeks old, when I add minced meat mixed with oat or barley-meal, with the broth from the meat, the meat being composed of sheep's heads and plucks, taken from the bone and finely minced, and just sufficient of the broth to form a dry crumbly paste. At five weeks old I consider a feed of good wheat and barley alternately, the last thing at night, quite necessary. Continue the custard up to eight weeks old, but adding more meal to it, with the green food. Give one sort of food at a time (just sufficient that they eat it clean up), and attendance every hour from the time you commence to feed until shut up for the night. Change the water repeatedly during the day."

A correspondent says that it is a good plan to feed a lot of sheep at night on the ground where the hen-coops are to be put the following day. By this means quantities of flies and insects are attracted to the droppings of the sheep, and easily afford a supply of their natural food to the young pheasants.

Young pheasants seem to require a certain artificial heat and acidulous food; perhaps this is why ants, containing formic acid, are so excellent a food for them. Some say that uric acid has the same beneficial effect. Toast common wheaten bread, and soak it for twenty-four hours in chamberlye. Dry the bread again, and crumble it down among the regular food as above, giving them it every day after the fourth. The food should be constantly changed. Feed the birds the *first* thing in the morning. With respect to water, doctors differ. Some successful men give none; some always keep some at the coops; others give some and empty the pan as soon as the young birds have drunk. The hen must not be forgotten. Some give water in which rue or bark of oak has been steeped, and water with saffron in it when the young birds are moulting. Water should always be given in very shallow dishes.

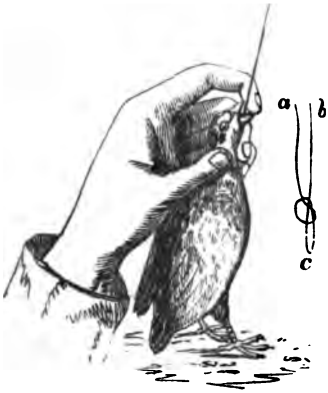
Some put a young chick or partridge with the young pheasants to teach them to pick up their food. If there should be any white clover in the field, it will materially assist in feeding the chicks, and they will find plenty of insects in the grass, which should not be mown. The coop should be moved a few feet every day, and some bushes thrown over it for shelter. The hen must be sparingly supplied with water, otherwise she will purge incessantly. The attendant should use a particular call at feeding times; for, when the birds are full-grown, and at large in the covert, they will come to their food at once on hearing the call they have been accustomed to, and thereby prevent much of the waste occasioned by wood-pigeons, rabbits, &c. The expense will depend much upon circumstances; one man will be pretty well occupied for two months attending to 400 chicks, and that number will, probably, consume a box of French eggs in a fortnight; but as they increase in strength and size the expense diminishes.

When the chicks are half-grown put the coop, hen, and young birds in the ride of a covert; feed three or four times a day; they will gradually take care of themselves. They should be put close to some very thick blackthorn covert, that in case of danger they may escape. There can be no better place to put young birds when nearly reared than a large walled-in vegetable garden. Bring them in from the breeding-ground when about two months or ten weeks old, and place them near a plot of cabbages, gooseberries, or raspberries, where they have good cover and feeding, and, above all, are protected from any injury at night during the period of their jugging on the ground, which they do for some time before they fly up to roost. By feeding them at the coops four or five times a day they will stay in the garden until fully feathered and able to fly over the wall to the adjacent coverts. At three months they may be turned out to the coverts, but feed them for some time after. Partridges may be reared exactly as above, with the addition of chickweed. To prevent the birds straying when they take to the coverts, the best and only plan is constant and regular feeding, and, above all things, perfect quiet. A good keeper ought to rear three out of four, barring accidents. The greatest enemies of the young birds are hawks, rooks, hedgehogs, and rats. The rooks will sometimes make a regular attack upon them, and carry off scores in an hour; but a shot or two soon stops them. The other vermin must be trapped. On no account should the coops be placed on grass which has been manured with guano, or the chicks will be covered with vermin. If from any other cause they should be troubled with lice, the hen's breast-feathers may have a little mercurial ointment smeared upon them, which will prove an effective remedy. Foxes may be driven away by suspending some pieces of white rag to be moved by the wind; or lay about some white paper—old newspapers will do. Clear sparrows off by laying a train of chaff and corn, and shooting. They are a great pest, and the young birds suffer from eating their droppings.

Pheasants may be turned out, when old enough, in the same covert year after year, provided it be a young covert, in as central a position in the manor as possible, near the keeper's house. They are a wandering bird, and, some time after the keeper's ceasing to feed them, will wander around in search of food, and roost in the tallest coverts.

Diseases.—*Gapes.*—In trying to extract the worms from the windpipe of a young pheasant or chicken which is suffering from the gapes with a horsehair, some difficulty at first is experienced in holding the head still while performing the operation, as the windpipe is very sensitive; the position of the fingers in which the head may be firmly held without harm to the chick is seen in the engraving. While in this position its windpipe and the sole cause of its distress may be seen. If the rays of the sun are permitted to fall upon its throat the worms are more distinctly visible.

The horsehair is tied in the manner shown in the drawing, and it is most expedient, as other knots cause the loop (*c*) to deviate from a line straight with *a* and *b*, making it difficult to introduce into the windpipe. The loop is about half an inch long, and must be rolled between the thumb and finger to make it angular, as at *c*. The introduction of the hair must first be by a quick push and kept in its place until it can be forced down, lest the coughing of the chicken should expel it. It should be put down about an inch and a half, and twisted in its course upward. Each operation should be performed in six or eight seconds of time. It is not absolutely necessary to remove every worm from the windpipe. Coarse hairs are better than fine ones for the purpose.



Again: Take a small feather, and ruffle the points back with the fingers that it may go easier down the windpipe (not the gullet); dip it in turpentine and oil, thrust it a good way down, and the long red worms will be found sticking to it.

Again: Get a piece of wire the size of a small knitting needle, and then a piece of brass wire as small as a horsehair. Coil the smaller round the larger wire, forming a spiral spring. Then draw out the larger wire, and a kind of tube is left. If this spiral tube be properly inserted in the windpipe, a worm is rarely left behind.

Woodpeckers' tongues dried are much recommended as a means of getting out the worms.

Another plan is to draw a flight feather from the wing, and insert it about one inch and a-half in the windpipe; turn it gently three or four times with the finger and thumb; withdraw (turning). Once doing is in general sufficient.

The following is a capital preventive of gapes and restorative for all kinds of young poults: Take half a pound of sulphate of iron, an ounce of diluted sulphuric acid, dissolved together; when dissolved, put two gallons of spring water to the iron and acid, let it stand twelve or fourteen days, when it is fit for use. The dose to chickens or young pheasants or partridges is a teaspoonful to one pint of water for them to drink, given twice a week or even thrice. For old birds it is invaluable; when weak in the moult it throws fresh blood, and strengthens wonderfully.

Again: Put a pinch of tobacco on a plate or any convenient place; light it and hold the open mouth of the bird affected over it; the fumes going down the throat destroys the worms. The chick must be kept in a warm place till it is quite recovered; then restore to the mother. If a place by the fire with flannel cannot be got immediately after giving the tobacco, put the bird inside your waistcoat, that it may have the warmth at once, Be careful not to give an over dose.

It is said that a single hard wheat corn dipped quickly in sweet oil, so as to prevent the grain absorbing any of it, and given every day to the poults, will prevent this disease.

Or, mix a pinch of Cayenne pepper in tallow, about the size of a large pea.

Again: When the poults leave the shell, let one common black peppercorn be put down the throat of each bird; then, dipping the bill into clean water to induce them to swallow a little, replace them under the hen, giving them no food until next day. Boil an egg hard, and chop it up, shell and all, rubbing into it as much oatmeal as will form a dough, and feed them upon this for two days, laying it down in small fresh quantities. On the fourth day, chop up some young garden-cresses or small onions along with the egg and oatmeal. If neither of these esculents be at hand let some of their seeds be kept ready, on which pour a little hot water; in a day or so the seed will have cracked and begun to sprout, and in this state mix it with their food. The poults are supposed to have, during this time, a closely-cut green grassy spot to run upon. Do not have the hen too closely shut up at night, but allow moderate ventilation through the coop.

Again: Place the birds in a small room by themselves, and then get some common tobacco and place in a tin box with holes in the lid so as to allow the smoke to escape into the room, say, two ounces, at the time; do not let the smoke be too great, so as to choke the birds. Repeat this about twice a week. Keep the birds separate until cured.

Or, take a blade of twitch grass and make a loop in it, and insert it into the bird's throat, and turn it round and round before withdrawing.

If any birds have during the day shown any symptoms of gapes, take some turpentine in a basin, and with a stiff feather smear the feathers of the hen, and immediately coop her. In a minute or two the young pheasants are being brooded by her, and consequently are inhaling the fumes of turpentine without being in any way frightened. Repeat the same thing the following one or two nights.

Mr. Tegetmeier says: " I have found no difficulty in curing the disease by the means of carbolic acid. A few drops may be placed in a spoon and held over the flame of a candle until the vapour is seen to rise, when the head of the young chicken or pheasant (held in the other hand) may be placed in the vapour, which the bird is forced to inhale. Care must be taken not to carry on the process until the bird as well as the worms are killed. I find after exposure to the fumes for a few seconds the bird may be regarded as cured, and may be seen running about quite well on the following day; if not, the treatment should be repeated. The medicinal carbolic acid is preferable to the tarry liquid used for disinfecting sewers and drains."

Cramp.—Cramp arises from various causes, such as wet, cold, the artificial diet on which tame-bred birds are necessarily reared, &c. The best remedy is some preparation of iron, which may be mixed with the drink. Prefer the citrate, because it is strengthening without being astringent or binding. A grain a day to a very young pheasant, or three or four to a half-grown bird, is sufficient. If you object to the trouble of preparing medicines yourself, try Douglas's mixture, which is a very good preparation.

Egg eating.—The habit is very common if there is not an abundant supply of lime. The appetite is first for the shells, but afterwards, even if lime is given, the taste for the contents has been acquired, and the habit is continued.

Ophthalmia.—Wash the eyes with a very weak solution of chloride of zinc, or a solution of nitrate of silver, five grains to the ounce of water.

Reduce the food at the same time, since many birds die from surfeit or are affected in this way.

Vent binding—Cut off the vent feathers carefully, and anoint with swee oil.

Management of.—In pheasant preserving a great deal will depend upon the kind of neighbours and neighbouring property which surround you. A narrow outside wood or plantation, with a south or sunny aspect to your neighbour's land, and a cold north one to your own, is the very worst of all boundaries. Some contend that as the hen pheasant never rears her full number of chicks, five or six eggs should be removed from every nest which is found, and reared under hens. Three or four eggs out of each nest should be taken early; the first eggs, if left, being liable to be frosted, should be taken (the greater part will hatch out), and more fowls' eggs are to be had early to feed the young birds. If more eggs are wanted to replace those likely to be spoilt, take them from the outskirts. The plan for picking up fresh eggs (which may always be known by the colour) is to carry a box about three inches deep and filled with bran, having a closely-fitting lid, and an india-rubber band by way of handle. If some only of the eggs are to be taken from the nest, a spoon at the end of a walking stick is useful. The eggs should be placed carefully in the box with the small end downwards, and the interstices filled with the bran. There are a great many nests spoiled in the mowing season, when the eggs are usually hard set. At this time the keeper should be a constant attendant upon the mowers, with a box filled with cotton-wool, and if his hens are ready to sit, most of the eggs will be saved. It is of no use trusting to the mowers themselves to bring in the eggs, for they are sure to let them get cold. Partridge eggs may be saved in the same manner. Wild pheasants require a considerable amount of food, beans alone for feeding purposes are not good, but a mixture of them with white peas and barley is. With an allowance of this mixture from the hand daily, and the occasional distribution of Jerusalem artichokes, parboiled small potatoes, and now and then a small bag of acorns picked up and stowed away for winter use, pheasants will do well in almost any locality where they can have free access to good water. It is a good plan to sow a lot of beans broadcast in any open part of the covert, it is very attractive to all game. Indian corn is capital for pheasants, and is their favourite food; next to that peas, small horse beans, wheat, barley, and oats. The young birds will do very well on maize with some turnip leaves and clods of turf to pull to pieces.

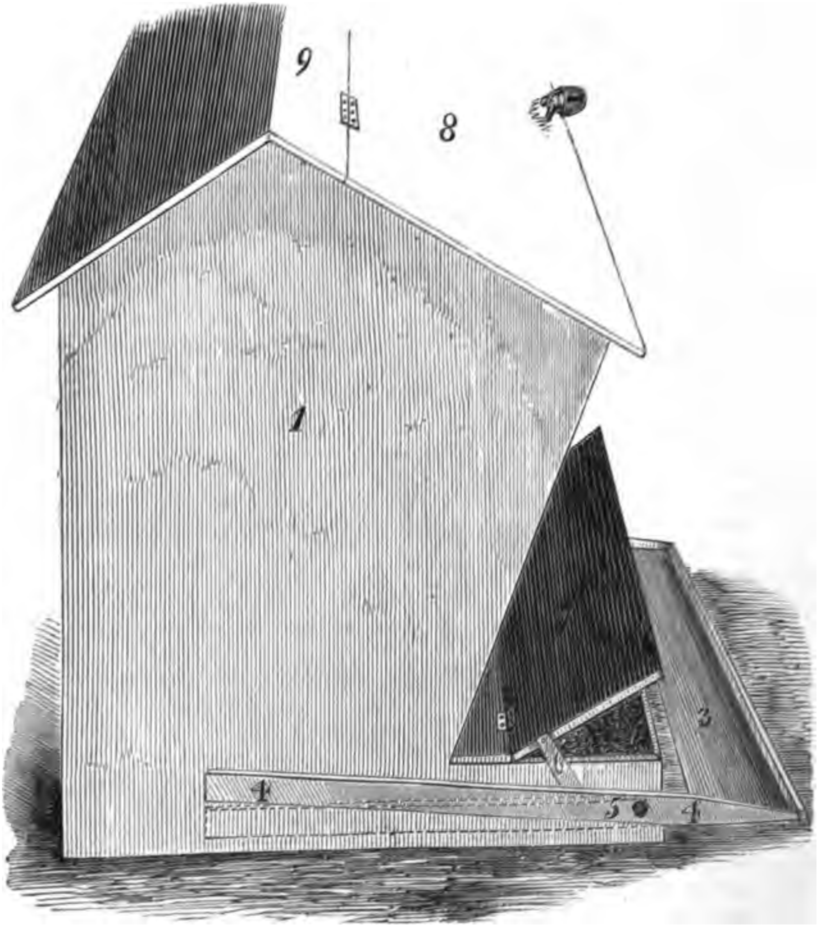
To Prevent Wood-pigeons, &c., Eating the Food of Pheasants.—Take four stout stubs about two and a half feet long, and drive them about half a foot into the ground, at such distances from each other as will form an oblong of about ten feet long and three or four broad; then nail a piece of stick across each end, lay lengthways a few larch poles (three or four will be quite sufficient), and cover the whole thickly with branches and tops of small larches, letting them hang over the sides and ends on to the ground, also pretty thickly; and in the vacant space underneath scatter the grain for the pheasants. To lead the pheasants to these places, scatter some chaff or corn-seeds with a small quantity of grain amongst it, in lines or roads of about a couple of hundred yards or so, through the coverts leading to the hut, say one for each side; and, as soon as the pheasants come upon these roads, they follow them, picking up the grain until they come to the hut, and, as they are suspicious about traps, they at once push in among the branches, and, having once found it out, they will always return. You can of course make the huts of any size, according to the number of pheasants; put up some in different parts of the coverts. They cost nothing but the labour of putting them up, as any rubbish of wood does for the frame, and in a plantation there are always plenty of branches and tops of larches to cover it with lying about. As a preventive to small birds and rabbits, as well as wood-pigeons: Take from eight to ten sacks of chaff, either wheat or barley chaff, and lay it down about six inches thick where you are going to feed. The quantity of chaff must be regulated by the number of pheasants and the quantity of grain you have to lay down. The chaff must cover the grain about three inches deep. There is no stated size to make your feeding-place; that must be left to the man who has charge of the pheasants. All he has to do is to have as much chaff as will cover the whole of the feed laid down. One handful being scattered on the top of the chaff, the pheasants will pick it up and scratch the other out of the chaff, picking it up as they scratch it out, so that nothing else has a chance to get any of the feed, as the pheasants will scratch no more out than they pick up. Wood-pigeons and small birds do not scratch for their food.

The following plan for a feeder has been found to answer: The box (1) contains the Indian corn or barley, &c., which, of course, will descend into the lower part by its own gravity, replacing that portion devoured by the pheasant from the trough (2), as quickly as it is withdrawn. The pheasant by jumping on the board (3), elevates the other end of the lever (4), whose fulcrum is at (5), and consequently pushes upwards the bit of hoop-iron (6) fixed to it (on the side nearest the box) by a pivot, simultaneously elevating the lid (7) of the feeding-trough. The lever (4) must be so constructed that no bird lighter than a pheasant, by jumping on the board (3), can elevate the lid (7).

The corn is introduced by lifting the lid (8), fastened by hinges to the other part of the roof (9).

Take particular care to render the roof and sides waterproof, as if rain,

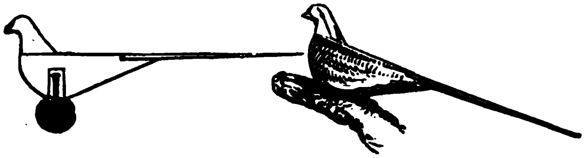
&c., obtains an entrance, it will cause the corn to clog, and consequently not descend into the feeding-trough.

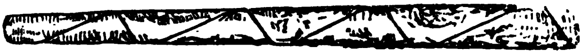


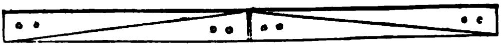
These "feeders" should be placed in a dry, bare spot in the coverts, wherever it may be most convenient.

A pheasant is supposed to be on the board (8), and therefore the lid (7) is represented as open.

Mock Pheasants.—To cheat those poachers who shoot birds at night off their roosts, and so cause them to fire many futile shots, mock pheasants are used, which may be made thus: Take a fir pole, saw it through at an angle of 45°; this cut, when rounded off, forms the breast of the bird; a cut at 22½° forms the tail end. So, by making alternate cuts at 45° and 22½ you may cut up the pole without waste, as shown in the engraving. A lath cut through in like manner at a very acute angle forms a capital tail, and the head is easily made out of the upper end of the pole, where it is too small to form the body. Daub over with some oil paint (burnt umber), bore a hole through the body for the nail, and nail on the tree with a chisel-ended nail, that you may not split the branch. Place them pretty thick where pheasants roost. By boring a hole one inch diameter from the underneath to within half an inch of the back, they will, if placed on a nail, move with the wind.







The cheapest method, as well as a successful one, is to tie up a bunch of reeds, the size of a pheasant's body, or grass, or heather, leaving a long reed sticking out for a tail. If reeds are scarce, then have by you the long feathers of pheasants' tails, or a few nut-sticks will do. A stock of very deceptive pheasants may be made with the skins of the common hen roughly stuffed and set up in different attitudes, the best being that of a bird at roost, the head close to the body, the rump a little elevated, and the tail down. These birds when naturally placed in crab trees, larch, or on the horizontal branches of the oak, will claim the attention of the most experienced thieves in the lightest night. A tolerable imitation may be effected by filling with hay or moss a bag made of what the ladies call "slate lining," and finishing off the posteriors with artistically arranged straw, which by moonlight appears sufficiently like a tail; real tail feathers introduced answer well. The "tame birds" should be placed near walks and open places, but not too near public roads or footpaths. Let them roost where they can be seen at night. In coverts where day trespass is permitted, they must be frequently moved, or their whereabouts will become too well known. It is well to distribute them plentifully wherever live birds may be expected to roost; yet the bulk of the dead stock should be in coverts from which shots could be best heard at the houses of the keepers.

A hay-band bound on a stick a foot long with tar twine answers well, and they are less observable in day time than the ordinary mock pheasant, and are easily changed from place to place.

PLOVER.

In a grass field frequented by flocks of plover, prepare three or four places for the net, to suit different winds, as it is always necessary to throw the net down-wind. The net is a one-winged clap net, of large size, the poles being from eight to twelve feet long. They are placed on the ground and thrown in the same way as an ordinary double-winged clap net; but in order to make the poles fly over quickly they sometimes fix them in the socket of a strong spring, which is fastened by screws to four little posts driven firmly into the ground. The spring box and poles are sunk in the ground sufficiently to allow of their being disguised by a little sand and chopped grass. Across the top of the pole a small trench is cut into which the net is put; the bottom edge of the net is fastened down in the trench, the upper edge is run into the cord which throws the poles; if the poles are eight feet long the net is about seventeen or eighteen deep, so as to cover the whole space in the sweep of the poles. Some nets are thirty-five feet long and twenty-six deep, and have some clever indiarubber spring contrivances to make them throw easily and quickly. The fowler goes out at dawn and sets his net so as to throw down-wind. He arranges about fifteen stuffed golden plover just to windward of his net, and to a fine line which plays over a stick he attaches four or five live plover, which he keeps for the purpose in a pinioned state in a walled garden or inclosure. Having arranged the trigger which holds down his net, and the throwing wire to his satisfaction, he retires to a little hole roofed with turf about fifty yards off, draws the throwing wire tight, and then sends off a boy on a pony to stir up the plover in other grass fields, so as to drive them to his catching ground. As soon as a flock approaches he commences calling judiciously with a tin plover-call, and at the same time plays his live birds—that is, lifts them off the ground and drops them, so as to give the appearance of birds in the act of settling. In doing this some experience is required, as the flock will frequently sheer off if their suspicions are aroused, and generally they will take twenty or thirty turns before they make the final swoop to settle. The moment the fowler sees they are coming up-wind to settle he takes hold of the cross stick and places himself in the attitude of a porson about to take the first stroke in a boatrace—as the flock comes up-wind to alight amongst his stuffed birds, and at the moment they are passing over the space his net will cover, he pulls. Over fly the poles, drawing the net out of the little trench in a graceful curve. If the birds come kindly, and he pulls at the right moment, he generally covers about half the flock. Practice and experience are required to do all this cleverly. The net is a square-meshed net of strong silk or leash thread; anyone accustomed to square netting could make one in a couple of days. In Holland grey geese are caught with large clap-nets; and in square-meshed hang-nets large quantities of woodcocks are caught during the flight in November.

In many sporting works directions are given for shooting golden plover. The sportsman is generally advised to fire at the birds with his first barrel, no matter at what distance away they may rise. He is also advised to pursue the same course in the case of birds passing at a considerable height above his head. It is said that this will frequently induce the plover to come back or down to the shooter, and thus pass within range.

A far more successful plan is as follows: So soon as the birds rise, no matter at what distance, the sportsman should drop on his knee, and at the same time put the dogs "down." He must take care not to face, while on the knee, in the direction in which the plover are going; but at right angles to it. This will enable him, in the event of the birds returning, to get an easy cross shot, instead of one in which he would naturally fire the first barrel straight upwards into the flock, and be compelled to twist awkwardly backwards in order to use the second. Once down, he should avoid any movement until the birds are out of sight. It is astonishing to see what a distance plover will sometimes go straight away, and yet return ultimately over the sportsman's head.

Artificial decoy birds are sometime used, painted models, which do as well as stuffed specimens if naturally coloured and shaped. Place these about in likely places, hide yourself and commence calling. The best plover-call is made from the lower claw of a lobster. The top part which is to enter the mouth is to be made like a whistle, and two holes bored at equal distances from the top, thus forming a sort of miniature flageolet. Three distinct notes can then be played upon it, and may be distinguished as the "Alarm," "All's well," and "Appelle."

ROOKS.

Catching.—Make, of cartridge-paper, a quantity of funnel-shaped cases to loosely fit a rook's head and beak, and sufficiently long to cover his eyes; anoint the interior with birdlime, and at the bottom of the case put a small piece of carrion; dibble these into any loose ground where the birds congregate—after the plough, for instance—the result is obvious. Rooks may also be taken by springes set on the ground which they frequent.

Killing.—Run up to a flock as hard as possible, and then, when they are flying off, let the shooter throw himself flat on his back. The rooks, out of curiosity, will circle round and round until they come within shot, when one or more may be killed; by remaining quiet, another shot may be obtained, as the rooks will circle round their dead companion.

SEA-GULLS.

Killing.—By lying down and feigning death frequent shots may be obtained.

Tie a stuffed gull to the board of an otter and make it navigate within shot. The sport is good if you keep concealed.

SNIPE.

Capture.—A lot of pegs six inches long are driven into the ground about the likeliest feeding places, at about three yards apart. To the tops of the pegs, about two inches from the ground, fasten a stout whipcord, and from that, about every two feet, a noose of dark-coloured double horsehair trailing on the ground.

An old work, "Osbaldiston's British Sportsman," advises the taking of them by means of limed twigs, set in a sloping direction and about a yard apart, some leaning one way and some another. According to this authority the birds will thus be taken by the wings when feeding.

SPARROWS.

Capture.—Presuming that a properly made net, called a batting net, is obtained, procure a light pole, about the length and strength of a fly-fishing-rod, and a bird-catcher's storing cage. Two persons only are essential for working the net. Let him that has the most muscular pair of arms take the net, the other, with the cage firmly strapped to his side, the pole. If you go to hay and corn stacks, or the eaves of houses, proceed thus: Let the net be raised and held open as wide as the arms will spread, about a foot and a half from the stack or house, which should then be gently touched with the pole behind the net—the pole should always follow about a yard behind the net; if too much noise is made with the pole the sparrows fly out ahead of the net. If the business be properly managed the birds will fly into the net, which should be instantaneously closed and laid on the ground for the purpose of taking the birds out and placing them in the cage. The net should then be raised, and the proceedings continued "as before."

The leeward side of stacks and houses, especially when a keen nor'easter is blowing, is the most productive of birds. A stack of chimneys, to which thick ivy clings, is always an excellent preserve. Large trees with ivy round, where the spray will not obstruct the net, are seldom tried in vain. Box, savin, laurel, and other thick shrubs are chosen by blackbirds, thrushes, &c., as well as sparrows, for lodging-places. When they are tried the net should be held up to the lightest side, and the opposite side (when possible) should be struck lightly with the pole. For catching sparrows out of doors never take a light with you; it enables the sparrows to see their danger, and more are consequently lost than are attracted. In very cold weather sparrows take to barns, cart-houses, cow-sheds, and such places, and then great numbers of them may be caught. In this case the net is superfluous, a good lantern indispensable; and if the sparrows are wanted alive, the same may be said of the cage. A dark night should be chosen, so that your game cannot see light through chinks and open places. One person should then mount a beam, or by some means fix himself as high up in the roof as possible, with a lantern strapped round his waist; the other should then rattle his pole in all the likely places for birds, and he with the lantern will soon have them all settling on his shoulders, head and body, and fluttering round the lantern, and will not have much difficulty in capturing them. If a tarpaulin is hung to the front of open cart-houses or cow-sheds before showing the light, fewer birds will escape.

Trap for, Mr. Keyne's.—This is simply a double-feeding coop, such as used for chickens. Its dimensions are as follows: 4ft. 6in. square, and 15in. high, with deal laths 3in. wide nailed 2½in. apart across the framework, and the same at the sides; the end laths are nailed about a quarter of an inch apart, so that a bird cannot get through. There is then another frame, similar to the one described, made to fit over it exactly, so that when the line is pulled (which must be done before any birds can be caught) the laths of the top frame shut into the open spaces between the laths of the under one, and the birds are in the dark, or nearly so. The next thing is to get the birds out, to accomplish which there is a slide at one end, which must be removed after the birds are in the trap, and replaced by a small wire cage, into which the birds all fly directly the light is let in. A large quantity of birds can be taken, and the trap can be easily made by an ingenious carpenter.

STARLINGS.

It should be observed that in every locality the starlings have a "line," that is, they fly from their roosting to their feeding places every morning about the same time, and over exactly the same line of country. The young starlings usually begin to fly strongly in September, and the time to catch them is when the young birds pack together in flocks, and first go out to forage for themselves.

To take them use a clap net. Each net is about 6ft. wide and 10 yards long. London professionals have nets of a large mesh, made especially for this work, about 9ft. wide and 16 yards long. Such large nets, if made of the usual ¾in. mesh, would be too heavy to be sharply worked by one man. Before daylight go to the place fixed upon; lay the nets in the open, about 20 yards from the hedge, and cut boughs from the hedge and twist them together into a hut or screen on the edge of the ditch. The amount of the bag depends upon being carefully hid. The decoy starlings should be ready "braced"—one is pegged down about the centre of the nets, another put on the twig. It is very seldom a starling can be taught to perch properly on the twig, and hence the twig is generally "stopped" by a checkstring when it has risen about five inches. This is enough to attract the attention of the wild birds, and that is all that is required. When unable to procure live starlings as decoys, use an old stuffed bird, putting him on a stout wire about 18in. long, to which a string is fixed, so as to make him swing about a little; this answers very well for one flock, but out of the first catch save two or three as a brace-bird and decoys. About dawn the decoy birds will begin to caw; this is a sign that starlings are overhead. Now lie quiet and look out; the decoys look upwards; move the brace-bird gently—a flock has seen him, but they circle round before attempting to settle. At last they make a dash into the nets. Now a pull—and the nets sweep down those still flying, and cover those that have settled on the ground. Then take them out alive—or crack their skulls before shaking them out of the nets; this is the best and quickest way of killing them, as the skull is very soft, and can be easily broken with the fingers. Young starlings caught in this way may be easily tamed, and, being great mimics, make amusing pets. Skinned and soaked in milk, with the backbone taken out, they make a pie by no means despicable. Treated as woodpigeons, they make a very rich soup.

SWANS.

Killing.—The method pursued in some parts of Ireland on the rivers is the following:—As soon as the ground is well covered with snow, the sportsman provides himself with a large double clothes-horse, such as is used for drying clothes on at a fire; having selected his position, he places this horse, opened until it presents the appearance of the letter V, open to the river. On each side or fold of the horse he hangs a white sheet, sufficiently large to reach to the ground, and seats himself between them. His attendant, in the mean time, takes a long circuit up-stream, so as to head the swans, who, as soon as he shows himself, float down stream with the current, and so pass within easy shot of the sportsman. This plan does not succeed with ducks, as they are more likely to take flight at once.

WILD DUCKS.

Decoy for.—The following excellent description appeared in the *Field* of Feb. 15, 1868: The pond should be of about two acres in extent, and should be kept free and clear, being three to four feet deep in the centre gradually shallowing to the sides. Several landing places on the banks, and in the mouths of the pipes, are neatly turfed, and on these the fowl delight to sit and bask—banking, as it is called—the widgeon also being especially fond of eating the short grass. The pond itself is in the form of a starfish, with six (sometimes more or less) arms or ditches extending from it in semicircular shape to different points of the compass. These arms—technically called pipes—are about 70 yards in length, by 8 in breadth where they leave the pond, gradually narrowing to half a yard at the other extremity. Over their whole length, and inclosing on both sides a small strip of the bank, is stretched a tarred net upon wooden hoops, closely fastened down to the ground, except for a small distance on one side of the pipe, near the pond, which is left open for the evolutions of the dog, to be mentioned presently. At the pond end the net is about 12ft. from the water, but the hoops gradually taper away to a height of only half a yard. At the small end is fixed a circular tunnel net, about 12ft. by 2ft., which can be easily detached and closed, and in which eventually the ill-fated birds are secured; the whole effect of the pipe resembling at a little distance the tail of a huge serpent, whose body is hid in the rushes and trees around the pond. From the mouth of each pipe is fixed, along the outer side, a series of screens to hide the decoyman and his operations from the birds in the pond. These screens, twelve or fourteen in number, are made of reeds in fixed wooden frames. Each screen is about 12ft. long by 6½ft. high, and they are arranged to overlap one another like the folds of a perpendicular Venetian blind, with spaces between, at which the decoyman may show himself to the birds in the pipe when the time comes to drive them into the tunnel net. These openings are closed towards the ground by a smaller screen of 2ft. in height, for the purpose of hiding the decoyman's dog, and over which he is taught to jump in and out at a given sign. By means of these screens, and the reeds which grow thickly round the pond in the intermediate spaces between the pipes, the decoyman is able to approach the water from any quarter unseen. Small wooden wedges are purposely left in the screens, and by moving these from right to left a sufficient peep-hole is made to enable him to watch the movements of the birds, and to command from different points a complete view of the whole pond. The duck and mallard begin to congregate in the pond soon after midsummer; but these are the birds bred in the neighbourhood. The earliest foreign fowl to arrive are the teal, which come in the first week in September. Widgeon come at the end of September; but it is not till severe weather sets in that the wildfowl arrive in any numbers. The decoy season is from October to March, when most of these birds take their departure for the north again. Duck and their congeners invariably spend the night away from where they have passed the day. The wild duck and teal feed at night, but the widgeon chiefly during the day, though also at night. The birds that come to the decoy pond arrive about daybreak, and, if not frightened, or disturbed by an approaching storm, remain there quietly till sunset, when rising in parties in quick succession, they all leave the pond, and fly out to sea, or to marshes and ditches further inland. Those that go to the mud on the seashore will often return to the pond during the night when disturbed by the rising tide, but remain only till the ebb uncovers the mud again. The tide in the daytime does not affect the birds, few wildfowl either entering or leaving the pond during daylight. But the pond is found generally to be fullest, and the birds more settled, when high water occurs between six and eight o'clock. With certain winds larger numbers may be expected than at other times; but the quantity in the pond one day is no criterion of what may be there the next, A large increase, or the contrary, usually denotes that a change of weather is about to take place. After the first severe weather has brought the wildfowl off the coast, the decoyman wishes for but little frost, on account of the difficulty in keeping his pond open. When the water does get frozen, he uses his best endeavours, with the assistance of several labourers, to keep some of the pipes clear of ice during the night—the only time when such an operation is possible, or when any repairs to the pipe can be performed. The first birds that arrive in the pond, attracted by seeing the tame ones swimming in it as they fly overhead, are generally spared to take back to their companions the news of such good quarters. The "lead," as it is called, gradually increases in this way, till at last several hundred birds have found their way to the pond. The most favourable weather for catching is a dull cloudy day, with a moderate wind blowing, the decoyman then being able to work without casting a shadow, and the noise of the waving rushes preventing his footsteps from being heard. In making his captures his only assistants are his dog and the tame ducks. His dog has to be carefully trained in the summer time to go in and out of the pipes, jumping over the small screen, at the opening which his master indicates by throwing a small piece of bread or cheese to the spot, and running along the bank, coming out again at the next opening higher up the pipo. He has to learn silence on all occasions, and must not even bark at the approach of a stranger; and, above all, he must never attempt to seize, or in fact to notice, the wild-duck. The decoy ducks also have to undergo a training. Of the common small tame breed, resembling in colour the wild duck, they are taken in the summer to the pond and taught to come at the whistle of their master, whom they do not see, to the opening of the pipe, where he is waiting to reward them with food. They are fed regularly, and always at the mouths of the different pipes, so that they may not be over-hungry at any time, and show too great eagerness to answer the whistle; neither are they allowed to gorge, so as to be indifferent to food when offered. Answering the signal with a chorus of quacks, they learn to swim steadily through the other fowl, guessing by the ear which pipe they are to come to; and, lastly, they are familiarised with the sight of the decoy man, so as to take no alarm when he shows himself suddenly between the screens. All wildfowl in taking flight from the water, rise head to wind. Whatever the cause, the rule is so invariable, that the decoy man can make no captures except in those pipes from which the wind blows into the pond; and hence the reason of having pipes extending in different directions to suit every wind. But having to approach the birds from the windward obliges him to hold before his mouth a piece of lighted turf, to keep them from scenting him. Armed by this turf, accompanied by his dog, and with a basket of food (refuse corn and grass seeds) upon his arm, he cautiously approaches the proper pipe, and, first satisfying himself that no birds are accidentally already in the pipe, he makes his way to the end nearest the pond. Then, whistling to his tame ducks, he throws two or three handfuls of food over the screen, so that it falls into the mouth of the pipe, and is partly drifted by the wind into the open water. His tame ducks, hearing the call, swim into the pipe, and begin eagerly to devour the food. The wildfowl about the mouth of the pipe, tasting a few grains that have been blown within their reach, and seeing the tame birds securely feeding, are tempted also to join them under the net; the decoyman, watching every movement through the peepholes, goes back a screen or two and throws another handful of food into the pipe higher up, and the birds, gradually gaining confidence, follow after it. It is not necessary that they should advance far up the pipe, as once under the net their fate is sealed; but the decoyman waits till the party feeding are detached from the main flock in the pond whose curiosity does not appear to be aroused, and then running back briskly to the screen nearest the pond, but where he is still hid from the birds in the open water, suddenly shows himself behind those in the pipe, and waving his hat frightens them into flight. Misled by the bend, which seems to promise an escape, they fly headlong up the pipe, some of them striking the top of the net in their course and falling back into the water, but immediately rising again, till all scramble and flutter into the tunnel net, where the decoyman, who has been following them with gestures—he dare not make a noise—detaches the net, and secures the whole flock. The tame birds do not rise, but, taking no notice of the decoyman, swim back to the remainder in the pond. The whole operation, from the time the decoyman signals his tame ducks till he gives the detaching twist to the tunnel net, hardly occupies three minutes. Finally, he takes the birds out of the net, and puts them to death by dislocating the neck. Hitherto the dog has taken no share in the proceedings. The decoyman, replacing the tunnel net, now returns to the pipe, and, knowing that he has caught all the birds who for the present are likely to be tempted by food, gives a signal to his dog, throwing at the same time a small piece of bread or cheese at the foot of the opening between the screens nearest the pond. The dog picks it up in his mouth, and, jumping over the screen, suddenly displays himself to the astonished wildfowl, who are not sufficiently alarmed to fly away. He disappears at the next opening, but in another second is seen a few yards higher up the pipe. Prompted by curiosity, and taking courage from numbers, they advance towards the dog, exactly in the same manner as a flock of sheep will do in a field when disturbed by the same visitor; but again he has vanished, and they stop. He appears again still a little higher up the pipe, and they follow more confidently, perhaps believing that they are driving him away; but at last he vanishes altogether, and while they are looking for his reappearance they are startled by the figure of the decoyman between them and the pond, waving his hat as in the previous case. Completely frightened, they fly up the pipe, and are all soon secured in the tunnel net. Should the dog by any accident mistake the screen at which he has to show, and appear behind the birds in the pipe, they will at once become alarmed, and swim back into the pond. After making catches in a pipe by both feeding and the dog, the decoyman has to leave the remainder alone till later in the day, when the birds having altered their position in the pond—some are again near the mouth of the pipe. There is usually only one pipe at which they can be caught by feeding, but the dog may often be successful at another, perhaps two others, if the wind lies between them. On some days the birds are much more sluggish than at others, and will hardly take any notice of either the dog or food. At such times the decoyman will send his dog suddenly into the midst of those "banking," and they scramble frightened into the pond; but before they have recovered their senses the dog has disappeared, and they only see him again presently in the mouth of the pipe. The numbers taken by means of the dog are more than those by feeding. Wild duck, widgeon, and teal rise when alarmed, but there is one variety of the duck tribe—the pouchard, or dun bird—which is by habit a diver, and in a pond of this description escapes the fate of the others by swimming back under water from the pipe into the open. In places where their numbers render it worth while, a particular arrangement of the pond is made, and they are taken by an ingenious net, which is suddenly placed in their line of flight as they leave the pond at dusk. The net, which is very large, is stretched between two poles, laid horizontally near the side of the ponds, but fixed on pivots, and so weighted that by severing a rope the decoyman can cause them to spring up suddenly into the perpendicular. This he does at the moment the birds rise to leave the pond (there being several nets to suit the different winds, as in the case of the pipes), and the flock, striking the net, fall into baskets or pens placed underneath, from which they are unable to rise before the decoyman has time to secure them. Great numbers have been caught in this manner, but the plan is only adopted for dunbirds; and at ponds where other kinds of wildfowl are more numerous there is a difficulty in using the nets without frightening away more than are caught. Some advocate the capture of the birds in the leeward pipes, deprecate any approach to windward, and forbid all use of the lighted turf.

The method employed of getting ducks, which abound in the winter at Arcachon, is not by shooting, but by netting. In the upper part of the bay there may be seen at all times of the year a perfect plantation of long poles inclosing great spaces of water. To these, in the winter, long stretches of net are hung, and into these the wild ducks fly and are taken. Vast numbers are thus captured yearly. Mr. E. Hewitt, in an article in "The Poultry Book," writes as follows respecting the capture of wild ducks:—"Two different ways of affecting this purpose I have frequently seen successfully practised. To ascertain the most favourite haunts of wild ducks is a matter of but little difficulty. This proved, the place should be baited for a few successive days, to encourage them to flock fearlessly and in numbers, and a little corn will not be ill bestowed. The first plan is by short lines, with a common fish-hook attached, the bait a small piece of the lungs of any animal; the 'lights' of a single rabbit will prove sufficient for twenty baits. As the bait itself will cause the hook to float, it is taken on the water, and then, the line being strong enough, the capture is certain. It does not do to fasten these lines to the bank, or the birds still at liberty become so alarmed at the struggles of those that are hooked, that they will leave the spot, and be shy for long periods afterwards, and it is not a solitary capture or two that is intended. Previously to baiting the hooks a few strong stakes should be driven into the bottom of the shallow part of the ford, the tops being about a foot or so below the surface. The lines should be long enough to give a little freedom to the bird when gulping the bait, and the end opposite the hook is to be attached to a weight, such as a piece of brick, which is placed on the top of the stake, and the instant the bird is nooked, and consequently gives the slightest pull, the weight, being suddenly upset, drags the unfortunate captive under water. On a long rail, supported at the ends by two uprights, I have known a dozen such weights placed, and seven wild ducks caught during one night only. The second plan is singularly effective, and even less troublesome than the former one to put into operation, as a boat is not required. In this case traps, similar to rat-traps are the means employed; the shallows should be previously supplied with not only a few ears of corn left swimming about on the surface, but some dozen heads or so should be attached to stones by pieces of string, so as to lie pretty close to the bottom, and they should be dropped in at intervals. After the interval of a few days the traps, each baited with a single ear of corn only—some advise a bean—firmly tied to the trigger, may be gently lowered to the bottom of the water, which for this purpose, ought to average from fifteen to eighteen inches deep; and as these birds feed chiefly at nightfall and early dawn the preparations for catching them are best completed by midday, and, the traps left to take their own chance until the following morning. The ducks are generally caught midway along the head, are always quite dead, and mostly are altogether hidden from view by the water. From the peculiar character of their plumage, although apparently much wetted on their first removal, if hung up half an hour in the free air they quickly dry, as the moisture is quite superficial."

Another plan is to lay a long line, say at least fifty or sixty yards, sunk at both ends and buoyed up by bottle-corks, placed at convenient distances, so as to keep the line on the water. Place hooks on best fine Nausel, each link from twelve to fifteen inches long and six feet apart, baited alternately with raw potatoes and pork fat, cut in small square bits. First throw boiled barley or cabbage, which is better, on the haunt for two or three nights; then set your apparatus, and you have a good bag in the morning.

Again: Get a half-decked boat, or a small vessel, say from fifteen to twenty tons (the former is preferable), and fix in her bows a stanchion gun fitted with a rope breeching, and fixed so as to raise the muzzle for a flying shot; then try the birds under sail. The gun should be loaded with three and a quarter ounces of coarse-grained powder, and twelve or fourteen ounces of shot. The weight of the gun itself ought not to be less than 115lb.

The usual plan to shoot these birds is that the sportsman selects either a temporary rain pool or a permanent one (in frost an open spring), whither wild-duck resort for night feeding. A screen of fir branches is then erected about twenty yards from the shallow end of the pool. About half an hour before dusk the sportsman ensconces himself behind his screen, and awaits the arrival of the wild-fowl. This is usually about dusk, when he may either shoot them as the flocks pass over his head (when they are easily seen against the sky), or wait till they have settled on the water, and have been on the feed for some time. The owners of lakes use a hut built on a raft for the same purpose, which is moored near the haunts of the wild-duck in the lake.

Decoy birds.—Have prepared a light hurdle made of laths, with six or eight cork ducks attached to it. This may, if deemed necessary, be kept in motion by a man at your side by help of a string. Now place in the middle of the hurdle a barrel containing a live duck. Lathe the barrel at the bottom for the duck to stand on, and make a hole for him to be taken in and out. This barrel must be attached to another string held by the attendant at your side (you being in ambush); and when you see duck pull the string of the barrel, when the imprisoned bird will commence calling, thus adding greatly to the effect of the decoys.

Stuffed birds, well varnished and a sheeps' bladder inside also answer; or else the stuffed birds rivetted on to pieces of flat cork properly leaded. India-rubber or mackintosh decoy birds may be obtained.

As a general rule ducks passing along are attracted by the greatest numbers, so if your fleet is a large one, it has, in a populous neighbourhood the best chance. The birds in the air commonly first pass the decoys, then wheel round to have another look at them. The shooter should be down-flight, out of sight, and he fires when the birds are returning. Of course there are endless modifications.

To keep in ponds.—Confine tame brown ducks with a wild mallard, and breed up the young you thus raise to the pond on which you wish wild-fowl to resort. They are attached to the water near which they are reared, fly like wild ones, and will teach the wild ones to follow their example.

WOODCOCKS.

In ordinary weather, unless a cock has already been flushed on that day, he sits very close; but if once flushed, he is difficult of approach in covert; and if he takes to the heather "by chance" you may happen to get a shot at him the second time he is flushed; but after that you had much better give it up—it is only waste of time. A woodcock is always more difficult of approach in a thaw than in any ordinary weather. Like all our land-birds, except a snipe, a woodcock likes to lie dry, and, unless disturbed, remains in his resting-place during the day; towards night flying often to a great distance to his feeding ground, which, generally, is open, soft, grassy land, particularly that pastured by cattle. In ordinarily open weather a woodcock satisfies himself with food at his natural feeding places during the night, returning in the morning to his dry resting place; but it often happens that in very severe frost he is unable to feed himself to his satisfaction during the night, and goes about during the day also, seeking for some soft ground into which he can poke his beak, which, of course, he does not find except at or near a spring; but when he is found trying to feed at a spring during the day-time you will find he is so much reduced as not to be worth shooting. In this country woodcocks are found either in covert or in long heather. A strange peculiarity exists with regard to the finds for woodcocks—in covert, generally on the sunny side, on banks facing the south-east, in the heather, very nearly invariably the reverse is the fact—you won't find one cock in long heather, on the sunny side of a heathery hill, for some hundreds you will find on the side which never sees the sun in the winter time. The latter end of autumn is the best time to burn high heather, as woodcocks prefer resting upon a burnt peat-bog to the thick covert of heath. A bog burnt in patches is the best thing to entice woodcocks.

WOOD PIGEONS.

Alive, to take.—Place "stooks" or sheaves of oats near the trees where the pigeons roost, and allow the birds to feed for a few days without molestation. Then scatter pretty freely grain soaked over night in gin or brandy near the sheaves, and, retiring to some hiding place hard by, await the result. The birds, after feeding upon grain so prepared, in a few minutes become so stupified as to be unable to fly, and are easily captured; and as pigeons after being disturbed very soon return to their feeding place if they think the way is clear, a great many may be taken in a single day.

Killing of.—Make an ambush in the field, and when you have killed one bird stick the dead bird up as well as you can to simulate a live pigeon feeding. The others of the flock are sure after a time to come to the decoy. Pigeons may be killed by threading a bean with a horsehair. The hair should be at least 8in. long. Pierce the bean, slightly softened with warm water, with a needle making a hole only large enough for the hair to be passed through. Peas or barley may be used in the same way. The prepared grain must be strewed about where the birds are likely to feed.

BREEDING.

ANTS' EGGS, TO CLEANSE.

Having obtained as many as you require for two or three days' consumption, turn them out on a hard road or walk, take an old horse-rug or some other woollen material, and draw it over them three or four times, taking care to shake the rug each time it is drawn off, that the ants, which stick to it, may be shaken off. After repeating this three or four times (more if required), the ants will be entirely separated from the eggs.

Again: Expose the eggs of the ants to the sun's rays, and at the same time place a white cloth by them, with a few green branches upon it. The insects will transfer their eggs to the shade of the branches directly.

FOSTER MOTHERS FOR GAME.

The best foster mother for game of all kinds is the silky fowl.

HINTS ON BREEDING.

In the first place, never choose a large or heavy hen to sit on eggs of any kind, but a fowl of a medium size and weight, neither too small nor too large. The bantam is decidedly too small for pheasants, as they are unable to brood them at the very time when they require most warmth; but for partridges prefer them. They are in general good sitters, and kind and watchful mothers. For pheasants a small cross-bred hen makes the best mother. They sit closely, and are extremely anxious and unwearying in their attentions to their brood. It is as necessary that a hen should be well acquainted with the walk on which she has to rear her young, as it is that she would be willing to sit; for if she is on strange ground, and is allowed to leave her eggs for the necessary exercise, cleansing, &c., it is very doubtful if she finds her way back before the eggs are chilled; and if not allowed a walk, and the opportunity to cleanse herself at least once in two days, she will speedily be infested with lice, &c. Purchase suitable hens at once; provide them with a good walk, get them accustomed to it, feed them well, and allow them every opportunity in the shape of dry sand, &c., to keep themselves clear of vermin.

COVERTS.

CONVERSION OF MIXED PLANTATION INTO NIGHT COVERTS FOR PHEASANTS.

Any plantation containing a due proportion of pines, or of spruce and silver fir, can readily be made a secure roosting-place for pheasants. All that is necessary is to cut out the larches as rapidly as can be done without letting in the wind too suddenly. The oaks, ashes, beeches, &c., may be allowed to stand wherever they do not injure a thriving pine or fir. The larches only are a dangerous temptation to the pheasants at roosting time. Their perfectly horizontal branches, and the considerable amount of shelter which their numerous twigs and regular head afford to the birds, induce many to perch in them; whereas young oaks, ashes, &c., attract very few indeed.

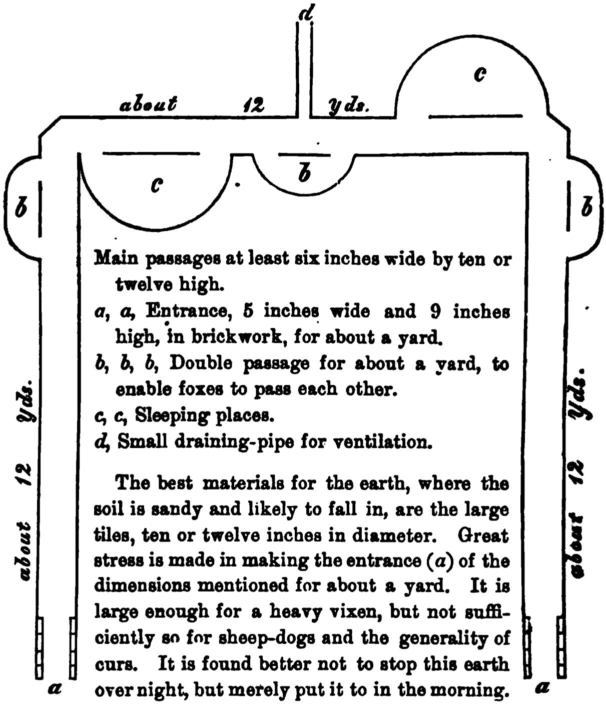
If the plantation consist entirely of resinous trees; if the soil be tolerably moist and fertile, let all the larger openings be filled with the best and strongest plants of silver fir that can be procured—let a cluster of three or more of these be planted in pits, carefully prepared with spade and pickaxe, about five feet asunder, in the centre of every opening. This species is not very liable to be nibbled by hares and rabbits if protected for the first year Let the branches of the felled larches be drawn around these young plants without delay. Silver firs are very preferable to spruces or pines for filling up vacancies. It also bears being removed large from the nursery, with very little injury or check to its growth. Around these, and nearer to the tall pines and spruces, may be tried plants of the holly-leaved berberries and common laurel.

Immediately under the pines and spruces it is useless to plant anything. The only covert to be obtained there is from heaps of branches left upon the ground as often as the trees are thinned. And this should be done almost annually, to insure plenty of room to the best and most thriving amongst them, whose side branches will then gradually become more or less pendulous. Pheasants in a covert like this need no great quantity of shelter upon the ground, for they sit, even during the daytime, chiefly in the tree-tops. Though the spruce and silver firs afford the most tempting perch to the birds at nightfall, still the Scotch pine, pinaster, Weymouth pine, *P. laricio*, and others, are all excellent.

FOX COVERTS.

For an immediate covert, and to last three or four years, or even more, choose a thorn covert. Get strong blackthorn, or the whitethorn, 5 feet high, stick them firmly about a yard apart each way (a small crowbar will have to be used), and in this way fill up a space of ground containing three acres in a corner of a field, as distant from roads as you can select. A fence round the unprotected side will be useful, but not absolutely necessary. There is no earth in this covert.

The following plan of an earth used in the midland counties answers most completely we are told:



Main passages at least six inches wide by ten or twelve high.

a, *a*, Entrance, 5 inches wide and 9 inches high, in brickwork, for about a yard.

b, *b*, *b*, Double passage for about a yard, to enable foxes to pass each other.

c, *c*, Sleeping places.

d, Small draining-pipe for ventilation.

The best materials for the earth, where the soil is sandy and likely to fall in, are the large tiles, ten or twelve inches in diameter. Great stress is made in making the entrance (*a*) of the dimensions mentioned for about a yard. It is large enough for a heavy vixen, but not sufficiently so for sheep-dogs and the generality of curs. It is found better not to stop this earth over night, but merely put it to in the morning. Wet and damp is particularly to be avoided, so under-drain the whole thoroughly. The depth into the soil is three or four feet.

Again: Make a good fallow, and drill in the gorse 1 foot between the drills, so that the weeds may be hoed out. Diversify it with some separate breadths of broom, which is of more rapid growth, and more self-renewing than gorse. As to earths: Choose a spot in the gorse covert, dig a ditch round its area, and on a level with the bottom of the ditch cut fox-spouts, opening into the ditch, and running over the area in all directions, according to fancy, and crossing each other, with here and there a space large enough for a vixen to litter. You have now your area cut and its spouts and spaces open. Get limbs of trees, black poles, and any rough stuff at hand, and lay it all over your open work, with some faggots interspersed if you like. Get blocks made out of butts of trees and logs of any sort; place these over the spouts and area, taking care that every here and there a fox can ascend from below. Build up a mass of these blocks, leaving space for a fox to circulate among them in all directions, and then surround the whole with thorn faggots, refuse of hedges, and any rubbish you can collect. When done it will look like a faggot-pile; and should cover an area of ten square yards at least, eight or nine feet high in the wall, and topped up with rubbish and thatched. A small flaw under the eaves in one or two places would allow ventilation. The entrance holes at the bottom of the ditch should be four or five in number, and should be made to look like rabbit-spouts, and yet so contrived as to prevent dogs from scratching and enlarging them. A few evergreens might be planted so as to conceal the pile. The outside ditch might be sloped down on its outside, and a quantity of loose bushy rubbish thrown about it, as, while great care should be taken in the construction, all appearance of trim neatness or design should be most carefully avoided. A few rabbits put into the pile would do good service, and their presence gives the foxes confidence. No wire fences—a small field, and all done to look, if possible, as if done by chance. The covert should not be less than four acres—the larger the better.

GORSE COVERTS.

If some roots are dead, and there are blank patches in the covert, sow some good French gorse seed on the green sod, covering it over with some good fine soil.

The proper time for sowing furze-seed is the latter end of March; during the first season it reaches a height of about eight inches, the second year it grows very fast, and in three or four years is a good covert for all game. The land for growing it requires no further preparation than being loose enough on the surface to be either harrowed or raked after the seed has been sown broadcast by hand. About three quarts per acre will be sufficient to sow. It is better to sow a portion of the ground with broom. The usual way is to sow a length about twenty yards wide of furze, and then a length of broom about ten yards wide, and so on alternately.

In Loudon's "Hortus Londinensis" appears the following notice with respect to the cultivation of furze or gorse: "Sow furze-seed early in the spring or on strong gravelly banks, on which there is a little good mould. Keep the plants clean, and transplant them in November or early in February. Fence them from cattle and keep them hoed; the occasional bite of sheep or lambs will rather do good than harm. In the following spring, clip off with shears the principal part of the first year's shoots. The plants will make very luxuriant shoots during the next two years." These directions have reference to the making of a gorse fence, but, with the exception of transplanting, they will equally apply to a covert. Gorse seed is rather difficult to get to grow regularly and well. It is necessary that the ground should be properly prepared, and when the young plants make their appearance they should be kept free from weeds of all sorts. Clean the land thoroughly; roll it, in the first place, with a clod-crusher, and then with a plain cylinder-roller. Having done this, harrow it with a rough bush-harrow, broadcast the gorse-seed, and again run over it with the bush-harrow, so as lightly to cover the seed with soil. Then finish with the plain roller. Gorse-seed, like grass-seed, should be only lightly covered with soil, or more than half of it will never come up at all. One-eighth of an inch is quite sufficient depth of soil.

Some people advise that the land should be fallowed the first year manured and cleaned the second, when, having taken off a crop of oats the gorse may be sown.

Take a square field, ten statute acres, of strong land, sloping to the south, down to a brook. Drain it; plough it several times spring and summer; sow it with wheat in September, and in April following sow it thickly with the best French gorse seed. Cut no rides in it; plant no trees in it; put a good fence round it; keep cattle and vermin out of it. In four years there will be a good covert.

Gorse coverts should be cut every seven years, or they will become hollow, and eventually die away. To avoid having the whole bare at once, one-third of it may be cut at a time, with an interval to allow the portion cut to get up. It should be cut pretty close to the ground.

To get a good supply of young shoots, set fire to the brake in dry weather, and let it burn down to the ground. The old stems will not perhaps be burnt off, only charred, and, if appearance is studied, they can be cut or broken; but the main object will be gained, for the young shoots will come out next season from the unburnt roots as thick as ever they can grow.

PHEASANT COVERTS.

Pheasants are fond of warmth; and it follows that a covert should be of that shape and size that the sun and air can freely penetrate; open at the bottom, so that the pheasants can run about it at pleasure, so as to keep their tails dry, with some brambles here and there, to hide themselves when necessary. Clear and open spaces should be made through the wood, some good racks to feed in, and places to stack the barley, which food will be found sufficient for the pheasants, if properly attended to, by throwing the barley in the straw about the different racks. All coverts should be, if possible, angular in shape, anything but square; as the interior of all woods of that shape, if of any size, is cold, and no game will resort there if they can possibly help it, without being driven. From fifteen to twenty acres is quite large enough for any covert for sporting purposes.

In the northern method of arboriculture not fewer than 2700 plants are placed upon an acre, at the average distance of four feet from each other. As not more than 200 or 300 trees of anything like considerable size stand upon an acre, and not more than seventy really large trees, it may be imagined how ceaseless must be the thinnings, and how actively the axe must be plied in such a system of rearing timber, to give the best trees something like space for growth and development. It will be also understood how important it is that the whole of this crowded vegetation should not consist as it almost always has done hitherto, of species of large growth, but that a good portion of the kinds planted should be of secondary stature and incapable of running too close a race with the principals. Now, instead of making our 2700 trees to the acre consist, according to ordinary usage, of about 700 hardwood principals and 2000 nurses, consisting of larch, Scotch and spruce fir, with perhaps a sprinkling of birch, our composition shall include three elements, namely, 600 hardwood principals, 600 secondary or subordinate plants, 500 birch as nurses, and 1000 Scotch fir or spruce. In consideration for pheasants we will omit the larch altogether. The numbers of each species may stand thus: *Principals.*—200 Oak, 100 Spanish chesnut, 100 Beech, 100 Sycamore, 100 Gean or wild cherry. *Secondaries.*—100 Hornbeam, 100 Whitebeam, 150 Silver alder, 100 Field maple, 100 Aspen, 100 Hazel, 500 Birch or larch, 1000 Scotch fir and spruce. A plantation so composed is easily thinned. The first trees to be cut out will be the birches or larches that have lost their balance and are inclining to leeward, the spruces that begin to look unhealthy, and the Scotch firs that are overcrowding the better trees. And at each successive thinning the value of the 600 subordinates will become more and more evident. They may be headed down freely, or cut out as occasion may require; but, being reproductive, will be ever present in the form of underwood. Underwood should be at one end.

To make a good, safe, and comfortable covert—that is, to be pretty safe from the poacher's propensities—plant a spruce fir every 30ft. or 40ft. The spruce grows quickly and thickly, and the pheasants will find shelter and safety. There is not so much noise in the gale with the spruce fir as there is with a Scotch fir. For lesser coverts, nothing is better than some osier-beds of moderate size, not too wet, as pheasants and hares will always be found in them. The best positions for coverts are the sides of well-drained hills, or rising ground with a good supply of water, having a S.S.E. or S.W. aspect.

Plough the land intended for planting into ridges, as you would for wheat; this will make land shelter for game. Then sow broadcast every kind of wild berry (blackberries should have been collected the last autumn for this purpose, in paper bags, and dried). All other sorts can be obtained. Then plant in the usual manner the trees best adapted for your soil, with a good mixture of beech; they will grow anywhere. Should you already have fir and larch plantations, mixed with beech, cut down all the latter within three feet or less of the ground, provided there remains some under branches to carry on the sap; give them plenty of air, and in one year or two those beech that would otherwise have chipped and injured your more valuable trees, will have thrown out long lateral branches, which must be pinned down to the earth with strong wooden forks (oak is the best); you will then at once have good permanent underwood in your larch plantations, provided you do not permit any leader to grow up perpendicularly; those can easily be lopped off once in two or three years.

The best material for pheasant preserves is evergreen privet, planted at intervals of three feet, or alternately with broom; the latter growing most rapidly the first year. If pegged down, even a few plants will rapidly extend themselves. Broom is a favourite food of hares, and very acceptable covert to all game. A fair proportion of each kind planted in patches from fifteen to twenty yards square, the plants to stand from two to three feet apart. Good bushy plants, four or five years old, should be selected. If the covert is intended for "ground" game only, pampas and other strong growing grasses might answer the purpose. One of the best of these in average English climates and soils is the common cock's-foot grass (*Dactylis glomerata*). It extends from our meadows, pastures, and hedge-sides into our woodlands and plantations, bearing a very considerable degree of shade even far north, and furnishing good thick bushes of covert, of which game are very fond of availing themselves. Its seed is easily procurable, and may be grown on patches of ground, turned over with the spade to receive it, here and there in the plantation, from which it will afterwards not fail to extend itself. Better still, to transplant the bunches of the grass itself from hedge-sides or road-sides, or from pastures where it is superabundant, for, though a tolerable ox or cow grass, it is little relished by sheep. It grows too profusely in pastures on the spots where horses drop their manure, and may be moved from thence with advantage. All the grasses are easily transplanted. The cock's-foot would, however, hardly succeed under beech or fir, larch excepted. Ribbon-grass is a variegated form of *Phalaris arundinacea*, and would succeed near springs, or on fine moist soils, moderately shaded, but is not generally available. In cold and humid northern climates, such as the higher parts of Yorkshire and the Borders, and on all the colder soils of Scotland, the hussocks of *Aira cæspitosa*, called bull-fronts, form admirable ground-covert, and may be easily transplanted from moor-edges, or neglected pastures, where they are most unwelcome to the farmer. They afford the only covert in many an outlying forgotten old plantation. Hares, pheasants, and indeed all game delight in this shelter. It is in cold climates and soils the best substitute for the bramble, which will not grow under such conditions. The pheasants will feed on the privet berry, and in a couple of years the covert will be excellent. For roosting, clumps of spruce firs will be found most useful, planted when about three feet and a-half high. The ground should be kept free from long grass, if foxes harbour, as the hen pheasants habitually squat in long grass instead of going up to roost. A few thorns planted at intervals are a great protection from poachers. The yew (headed down) is the best, where the drop is heavy; briar, wild white rose, arbutus (seaside), privet, narrow-leaved willow (in dry soil), alder, crab, American juniper, Tamarisk gallica, Portugal laurel, laurustinus, holly, box, Jerusalem artichokes, sunflowers, broom, mountain ash, wild cherry, and thorn.

The Italian black poplar is a good tree to plant in small coverts, associated with spruce and silver firs. The poplars should stand about eighteen feet apart, and it will conduce greatly to the growth of the trees if for the first four seasons the soil be hoed over twice a year. The proper proporrion of trees for a small plantation is—ash, 200; beech, 200; sycamore, 200; hazel, 400; birch, 300; larch, Scotch firs, &c., 1200. The best underwood is formed by the hazel, the field maple, the aspen, the alder, and the silver alder. In a narrow strip of coppice running north and south there should always be a good sprinkling of hollies. These strips of plantation should always, however, if possible, run east and west, and their outline should be varied by undulating or short cross lines of planting where the strips are met by cross hedges. The common field maple is a valuable tree for this kind of plantation. For all kinds of coppices the grey or hoary alder is one of the most valuable. It is very rapid of growth and is at home in the driest soil. It not only shoots freely from the spool, but throws up a number of suckers. It is a valuable tree to plant with oak, as it stops short just at the right time, allowing the oaks to take the lead, and subsiding into underwood.

The snowberry is also good. It makes thick covert, produces berries which pheasants are fond of, and grows readily in peaty or light soils. Moreover, the twigs are as tough as osiers, and it is as easily propagated. Nothing makes such good woodcock coverts as holly, which should be topped two or three years to make it spread. All evergreens are good. Yews, hollies, and spruce firs, topped and left to spread, make good covert. Woodcocks like a dry bank with open bottom, and a good deal of top over them. Berberry makes an excellent covert, and likes the shade; but costs a good deal for labour in keeping it weeded; it likes a good stiff clay, but well drained. Sweet chesnut is excellent. In parts of Oxon and Bucks, where back woods abound, the usual plan is (when covert is wanted) to thin the beech every eight or ten years, taking out all the large big-headed ones and cutting the rest well up, so that light and air can get through. The result is, that in a couple of years the brambles, grass, fern, &c., which spring up, make splendid covert for hares and rabbits, and will continue to grow until they are again deprived of air by the growth of the side branches of the beech. Holly and yews grow very well also, and make good pheasant covert if not destroyed when young by rabbits; and spruce and rhododendrons wherever there is an opening. The latter have this advantage that rabbits will not touch them; they require, however, light sandy soil or peat. The best covert under trees is the common Mahonia. The Tritoma makes good covert. It should first be raised in a prepared bed, and when about two years old from the seed should then be planted out. It is as well in all pheasants preserves to plant in the very centre of the manor a few acres of spruce and Scotch firs, as it is next to impossible for poachers to detect the birds when roosting, Gorse or heath will not last long in the dark under trees and drip; privet will last longer, but gets thin and naked unless the covert is methodically trimmed in order to admit light and air.

The following trees and shrubs may be planted with advantage in any permanent covert: Marsh elder, field maple, hornbeam, and grey alder—a good tree for dry soils forming a good underwood.

DEER.

BARKING TREES BY DEER.

Mix well together two pails of fresh cow-dung with a pail of lime, and add thereto a pint of gas tar; dilute with fresh water to a sufficient thickness to lay on with a paint-brush, and plaster the shrubs or trees at a height for their protection. This need be done only once in the twelve months.

DEER KILLED, TO PRESERVE.

Carefully remove *all* the inside and all the blood; if possible (water being near), wash the inside well, then remove the body twenty or thirty yards from the ground where the operation has taken place, make a bed of dry ferns, heather, or grass, on which let it rest, cover it well over with the same material or branches of fir trees.

Or get a muslin sheet and wrap it round the deer. Coarse muslin is light, wide, and cheap. Sew, say, six yards of it together, in the shape of a sheet or tablecloth; this would go into the keeper's pocket, and might be thrown round the deer on the hill easily.

DEER PARKS.

Five feet four inches is sufficient height for a deer fence, if made of wire.

Deer parks it should be formed on fine old pasture, or natural grass, with a stone wall high enough to keep the deer in—say twelve feet high—with a belt of plantation to bind it all round the inside; a stream or pool of clear water (the wilder to look at the better) is necessary. At each end, within the belt of plantation, have a feeding-shed—one at the east, the other at the west end of the park, with a private door near each to enter by—for winter feeding. Feed both the red and fallow deer in winter with oat-straw, meadow-hay, and Swedish turnips. Have oats ground as whole meal, and bannocks (thick cakes) baked, of which they are fond. If weakly give them a sheaf of unthreshed oats at a time to eat, straw and all lettuce, carrots, potatoes (good ones) raw, all which they are very fond of.

There is nothing so hurtful to a herd as an overstocked pack, one deer to the acre being sufficient, unless the herbage is unusually good, and artificial feeding carried out to a great extent during the winter. Before introducing new blood be very particular in killing down all the old deer, both bucks and does, especially the latter, as they do great injury to the herd alive, and are of very little use when dead. The old bucks with their large horns drive away the young strong-constitutioned deer, and leave a sickly race of fawns behind, which probably die the first severe weather. For fresh blood four or five year old bucks taken about the end of November are best, as the rut will then be over and their horns fit to cut.

TREATMENT OF STAG AFTER HUNTING.

After hunting, put your stag into his shed or stable, with water, corn, and hay, and leave him perfectly at rest.

DOGS.

BLOODHOUNDS, TO TRAIN.

Fasten a piece of horseflesh to a cord, and let it be dragged for some distance over a pasture, and then encourage the dog to follow it up. When the boy dragging the meat is overtaken, let the meat be given to the dog. When the animal has become perfect in this, let some meat be fastened to the sole of the boy's boot, and let him go some three or four miles across country, being careful to get up into a tree at the end of the run, or he may get some injury from the dog. Let the owner or keeper of the dog be careful always to accompany him as closely as possible, and to give him the piece of flesh. The flesh may now be gradually diminished until none is put on the boy's feet, when the hound will run the boy, and his training is perfect.

BREAKING DOGS.

A well known sportsman thus writes: "Nothing can be done at first with a dog if the gun be brought into requisition; the pupil should only see game taken that requires no taking after a long point and harmless squib. Nothing answers better for this lesson than a home-bred pheasant accustomed to the farce, with a leveret or rabbit by way of a change. A landing-net placed gently over the prize will secure its recapture. It may then be placed in a covered basket lined with hay. When this lesson has been repeated several times, the dog may be taken to any convenient ground, where there are no scents, to receive a lesson in quartering, and the usual and well-known manœuvres may there be practised. The chances are that he sees and does in a very short time all that is wanted. If not, the old scheme of dog-fugleman will soon make him understand it. When he quarters well, turning of his own accord, he must be made to turn, drop, and return to heel at whistle, voice, or signal. Having had nothing in the way of game to excite him to rebel, he will soon *acquire habits of obedience*, and do whatever he is ordered; and, better still, he will *know* that he is doing it, as well as be fully aware when, at a future period, he is receiving well-merited chastisement, for what reason the gift is bestowed. The pupil must next be *led* to some good covert, neither too high nor too low, nor too thick nor too thin, where there *are* birds—if scattered all the better—and allowed *carte blanche*. The chances are that he quarters, points, and drops at once; but if not, recourse must be had to the cord. When perfect in this lesson, but not before, he may be taken out with gun, whip, and puzzle-peg. He will, in all probability, as before, quarter and point, and downcharge when a bird is shot before him; but should an unlucky flutter, aided by the shooters' eager glance, tempt the neophyte to a false step, the instructor must remembor punishment for a first fault is mercy. He must be tickled soundly, and *must wear the peg*. The peg answer the purpose generally expected from it as long as it is on, and proves beneficial afterwards to many a potterer whose breeding is not very deficient. It also affords a most excellent mode of punishing canine delinquency if attached immediately after its commission, and not made use of too frequently, enabling us to dispense with the lash, save in very grave cases indeed. The peg should be of iron, and bent downwards at the point. We never knew it to injure a dog, but still advise it to be attached only after the first fire is off. No young dog, however virtuous, should be taken out with an old sinner who follows flax. Once seduced, cure or kill is all that remains for us to do. To effect the former, and avoid being compelled to perform the latter, we must make him change places with the first *lucky* hare he may follow—let fly at him instead of her. The first case may be treated leniently. The criminal may be allowed to progress—say 100 or 120 yards, according to gun, shot, &c., before the pills are administered, and receive, we need not add, the dose in his hind quarters. The specific generally brings the patient to his senses at once, and he either drops, or comes sneaking in, looking very sheepish. We do not advise the use of anything larger than No. 6, and beg leave to add that side-shots are objectionable when fired by such as have a trick of aiming well forward. For rapidly advancing the education of a dog there is nothing like a pack or covey of youngsters, which will want to be operated upon methodically. Full fledged birds won't do, unless paired; but then they ought on no account to be fired at, whether the season be closed or *not*—not even to make a dog. No one would think of wasting the 12th or 20th and two or three following weeks in dog-breaking; and after that grouse and blackgame are the worst materials in the world (except red partridges) we are acquainted with, owing to the trick they have of taking too good care of themselves. There is, however, for this purpose nothing better than a young rabbit.

CHASING, TO CURE.

Procure some tame rabbits, the colour of wild, or resembling a hare, and turn them out before the dog, covered with cayenne pepper on the back, so that the poor creatures should not feel the pain of sneezing. After three shots the fault may be cured.

Again: Hunt him with a line. On coming to a point let some one get hold of the end and lie down, and when the birds rise and he attempts chasing, let him jerk him and use the usual cautions with the voice, as well as the whip, if requisite.

FOOD FOR AND METHOD OF FEEDING DOGS.

First draft the young or timid dogs, and feed them, return them to their kennel, and then let out the stronger ones. By this you secure an equal portion for each dog, and always have them in good hard-working order. See the dogs feed under your own eye. Most servants put down the mess, shut the gate, and think their duty is done; but in every kennel there is a master or mistress dog, who will let no other approach to feed. If you adopt this method three-fourths of the food formerly given will suffice.

It will be frequently necessary to feed some dogs apart from the rest, if it be wished to keep them in proper condition. If a dog be clean and free from disease, and still out of condition, rest assured there is neglect somewhere. Worms may sometimes be the occasion of it, as they will quickly affect condition; but their presence is readily discovered by a change in the coat, which becomes rough and the hairs erect, as well as by other circumstances. Bad or new oatmeal will sometimes produce worms. It ought, at least, to be three months old before being used. New meal will not go so far, nor make such good porridge; it is, moreover, unwholesome, and interferes with the condition of dogs.

All dogs in confinement ought to be liberated every morning, if it be only for five minutes, and during the summer months have regular exercise every other day, increasing it gradually as the season approaches. A walk on a road three or four miles out and back every other day, for about a month before the 12th of August, will be attended with advantage; and the dogs' feet should be washed on their return with a solution of equal parts of alum and salt. If each dog has a dose of castor-oil and syrup of buckthorn twice prior to the commencement of the shooting season, it will improve his condition; a tablespoonful of each will suffice.

Plenty of clean dry litter, wholesome food, and occasional doses of sulphur, with regular and sufficient exercise, will be required to keep dogs healthy throughout the summer. Summer food—oatmeal porridge, biscuits, vegetables, fish and milk, flesh occasionally in small quantities, but thoroughly boiled. In the sporting season dogs ought to be fed on their return home —food to be lukewarm, and to consist of oatmeal porridge and flesh well boiled, in small quantities well mixod with the meal.

Some mix rice and greaves in equal parts. It is a good mixture. Occasionally vary the food with barley meal and pot liquor, and an occasional feed of flesh.

Others boil just enough greaves to flavour the boiling water which is to scald the required quantity of oatmeal or barley meal, which should be made into a stiff, not wet dough. The dough should be as moist only as an ordinary loaf ready for the oven, and should in that state be given to the dogs. The greaves should be broken fine, and in a dry state mixed with the dough.

The root of mangold wurzel is good, pared and sliced and boiled to a pulp, with a little meat to give it flavour; it is then mixed, broth and all, with pudding. Dogs eat it well; it produces a fine coat and condition, and keeps them healthy. Some use rice meal, instead of oatmeal, as a summer food; it is well boiled, and made into pudding: it is cheaper than any other kind of meal, less heating, and dogs like it very well. When dogs are wanted for hard work there is nothing which will take the place of good well-boiled old oatmeal.

Setters should have little or no animal food.

In India, sportsmen give wheat, rice, and great millet ground up with the skin, but not the husk.

Boiled horseflesh, unmixed with oatmeal or flour, is not a good food for dogs. The meal should be in equal proportions with the flesh at the very least. Meat may be slightly salted without injury; but regular salt meat does not agree with dogs. If a quarter of flesh is brushed over with a wash of quicklime and water, and hung in a shaded but airy place, such as a tree, it will keep for several weeks, even in the summer.

Horseflesh ought to be thoroughly boiled, *i.e.*, about three hours; after which the bones, which ought in the first instance to have been broken, must be removed. The flesh which has not been reduced by boiling may then be cut into pieces, and mixed with the porridge, which is the best plan, or given separately to those dogs which require extra support. These pieces of flesh, as well as the bones, can be taken out with a strainer.

Indian meal is a most wholesome and nutritious food for dogs, when properly used. They will work hard when fed on it. It is not so heating as oatmeal is. It is, however, very binding, and should not be used alone, but mixed with more laxative food. Mix it with dog-biscuit, about equal proportions of each, boiled separately—sometimes mix it with oatmeal. but prefer the biscuits to the oatmeal. Greaves may be added, when there is no flesh, merely to give a relish; but too much of them should not be given, or it will create surfeit. Indian meal must not be at all stale, and it does not keep long quite fresh. If this be attended to, and it is well boiled, with a proper quantity of salt, and the biscuits not soaked long before mixing with it, the dogs will thrive well, always premising that they have dry, warm beds and regular exercise.

A correspondent writes: "I have fed my dogs in the Highlands for three years on Indian meal and crackling cheese. The Indian meal must be thoroughly well boiled; it requires much longer boiling than oatmeal. I allow about one half-pound of crackling cheese to each dog a day; but when they are working I give more—say about one pound. I cut the cheese into small pieces, and put it into a pot filled up with boiling water. I allow it to stand by the side of the fire for at least six hours, so as to get completely softened. I then boil it well, adding more water as required. I give it as thin as broth, and mix it well with the porridge, which is given to the dogs just warm, but not hot. I never give the Indian meal porridge to the dogs the day it is made. I always allow it to stand in a cool place for a day, and for two days when the weather is cool. I make the porridge so thick that it cuts up with the spoon, like a new-made cheese. I may say that I have given this diet without a change for three years. Occasionally, but very seldom, I have during winter made up a mess of boiled fish and ship biscuit, made into a kind of soup. I sometimes find my dogs wormy, but I do not know that the feeding I give has anything to do with that. My dogs always look well, and are always up to their work.

For worms I give areca nut powder—say one dessert-spoonful mixed with butter, to each dog. I give buckthorn, and sometimes castor-oil, after the powder, but more frequently the powder, just by itself, which works the cure."

Another correspondent says:—"I began to feed them on greaves and oatmeal, and one after another they fell off, got surfeit, and all were afflicted with tapeworm. I stopped both greaves and oatmeal (the latter from its expensiveness), and began to feed on Indian meal, with a little rice, and once a week bullock's liver, with cabbage well boiled. They at once began to improve, and, though they were reduced to skeletons almost, are now in good condition and great heart. I think it very important that the Indian meal should be well boiled for two hours at least. When living in Ireland I always fed my dogs on Indian meal, milk, and potatoes, with boilings of bones from the house, and scraps, &c., and I never had a case of disease at all.

Dog biscuits may be thus made: Make dough in the usual way with three-fourths undressed wheat flour and one-fourth coarse oatmeal. Raise it with yeast, as for common bread, and when fit for baking roll it out thin, cut into shape, and bake in a slow oven. Some add a small quantity of lard or dripping in. Biscuits must be prepared for use by being scalded with boiling liquor and left to soak. They will swell considerably When cold, or nearly so, they may be mixed with other food.

To make good porridge, the meal must be sprinkled in gradually, so soon as the liquor boils, and stirred continuously till it becomes sufficiently thick; after which it may be allowed to boil about twenty minutes, when the fire may be withdrawn from under the boiler and its contents left to cool. The porridge if well made, ought to be of the consistency of a good solid pudding, so as to be cut out with a shovel. About 1lb. of meal will be sufficient for each dog *per diem;* less, if much flesh is given. The porridge is removed by some sportsmen from the boiler as soon as it is made, and poured into shallow troughs made expressly for the purpose. There is an advantage in this process when the food is required for immediate use, as it becomes cool sooner. You ought to boil three times a week during the summer months, as porridge soon becomes sour in hot weather.

Coarse sago is a good change for a pup; it must be well boiled, and mixed with milk when cold. Barleymeal is too heating.

GUN-SHY DOG, TO CURE.

Tie the dog up every day before feeding him, and then fire a pistol over his head. In a short time he will get used to the reports.

Another plan is to lead the dog out, and get some one to walk thirty or forty yards in advance with a gun, and fire squibs at short intervals. At every report you should stop, caress the dog, and give him something to eat. You must persevere in this treatment till the dog quite gets over his dread of the gun. You may also stand by him, when he is feeding, with a gun in your hand, so as to accustom him to it as much as possible. Be very careful not to thrash him, or in any way alarm him, but on all occasions employ the greatest possible kindness.

Another plan adopted by a contributor to the *Field* was the following: He obtained some tame rabbits, and had one turned out every day on the grass by the kennel, then the gun would be fired, and he immediately cheered the dog (a spaniel) out and on the scent. This the dog seemed to like, though she looked suspiciously at the gun. Every now and then he permitted the dog to kill a rabbit. In a little time, instead of her being afraid of the gun, she would be most anxious to have her hunt. This process cured her.

Fasten up the dog, if possible, in companionship with another who likes the gun, in any outhouse. Every morning walk to the door, whistle, fire off one barrel, then open the door and give the dog some favourite food. Turn round and fire off the other barrel, and take no further notice of the dog, but leave the door open for him to go out if he likes. Repeat this for a few weeks until cured.

This plan has in some cases been found to answer, especially with young dogs: Let him be led out several times a day in company with his master, who is to carry a gun, but on no account to meddle with the locks; when the dog becomes a little familiar with this weapon, or whether he knows it well already, he must be taken where birds of any sort are plentiful, or to a rabbit warren; the gun may then be frequently cocked and uncocked, and pointed at *some living object,* and after a time a cap snapped—no notice whatever must be taken of the dog; he will be now very nervous. After a few lessons in this way, upon different days, the gun may be lightly loaded with powder only, and fired as if at a rabbit or bird, and Ponto encouraged to run, though still on the chain. When he gains a little more confidence, rabbits or birds may be shot to him, and he must be then cheered on to mouth and run shot. And cure them of running shot and mouthing afterwards.

Again: take in one pocket a pistol, with one cap only on one nipple; in the other pocket take a live young pigeon, which can only fly a few yards; hunt your dog in any grass field away from the kennels; call him to drop to your hand. First, fire the cap off; secondly throw up the pigeon. Keep him down while you fresh cap the pistol, and then let him see you take up your bird. Repeat this, and, when he has no fear of the cap only, add a little powder, then a larger charge, and so on till he can bear a louder report. In about two weeks' time you may shoot the pigeon with a gun, and the dog will be cured. A fresh-killed pigeon thrown up will do almost as well as a live one. Keep him very short of food in the kennel, and feed him with the hand only. Take out the dog regularly with you when you shoot, but let him go with no other person. Fasten him to yourself, and don't let him range. Shoot over steady dogs that require no checking, if the patient be a retriever. Fire away, and never mind the dog, not noticing him in anyway. Leave him alone till he makes the grand discovery that there is nothing to be afraid of in the report of a gun. After a while—it may be eight or ten times, more or less—when you see that he is getting indifferent to the report of the gun, you may pat him and let him snuff the dead birds. Seeing the other dogs ranging will make him wish to join them, but do not be in too great hurry. Wait till he strains on the leash, or shows unmistakably that he means to hunt, and there will be no more trouble. Have a little powder fired off at a distance, and a dead bird put down (game or a pigeon), and quietly lead the dog up to the place, and bag the bird. There is no occasion to let the dog see the gun at all at first, and it may be accustomed to the distant report, and brought nearer by degrees. A man, of course, must go forward with the gun out of sight, and the dog must follow with its master.

A Spartan remedy is to couple the dog to a larger and stronger retriever who is very fond of the sport, and then shoot.

GREYHOUNDS, MANAGEMENT OF.

Let your brood bitch be in good condition, but not gross. Let her be groomed and exercised daily, and kept delicately clean. Let a bitch pup in an empty stall of a stable in which one or two horses are kept; it secures an equable temperature and warmth. Let the bed be raised a little above the ground, with plenty—but not too much—clean straw, renewed at least once a week after the first nine days. Do not rear more than four pups upon your bitch. Feed your bitch generously with nutritious slop food three times a day, strengthening the food as the pups advance in age. She will show symptoms of wishing to wean them when five or six weeks old. Let the pups about that age have warm milk and a table-spoonful or two of coarse brown sugar mixed in it. As soon as weaned, mix with the milk or broth sheep's liver, or any other light soft animal food and soft bones. Let them be fed at least twice a day. Remove the puppies some short time before weaning to a more capacious and airy place—it cannot be too light. Begin from the first to brush them and keep them delicately clean. When fine, loose them out to scud and play until they have had enough, and then let them be shut up. April is the best month in the year for a bitch to pup in. As your puppies advance in age, biscuit and sheep's paunches, well cleaned and boiled, and mixed up warm with the biscuit and broth, or milk, is a very good and wholesome food—with all the soft bones and vegetables that can be gathered as scraps from the kitchen. Exercise more widely in fields and amongst fences. As an alterative give them a full meal of warm whey from the cheese-tub once a week, and, if physic is wanted, give one table-spoonful of mixture composed of three parts of castor oil, two parts of syrup of buckthorn, and one part of syrup of poppies. When your puppies are five months old begin to lead them, and couple them in straps, and take them along roads and into town to accustom them to noise and bustle.

About the month of August, begin with the dogs you intend to course with the ensuing season, and the nearer they are to two years old before you run them the safer and better. Prepare them by giving each dog an emetic of salt and water—two table-spoonfuls will generally effect this; then feed them, each dog separately, once a day, about four o'clock, as that hour is more uniformly attainable on running days; a full meal for most dogs will be two pounds weight, half farinaceous and vegetable and half animal. Chiefly depend upon biscuit soaked and softened with broth, but not made sloppy; and, as a change, oatmeal dumpling, well boiled and left to dry until it becomes hardened and firm. Animal food varied as often as possible—sheep's heads, liver, cows' heads and heels, and in every meal some portion of bones of some sort, and some two or three potatoes; every now and then a well-cooked Irish stew, made of neck of mutton, is generally relished. A week before any important event, good sound mutton, alternate days, with beef boiled and the gravy with the meat well chopped into small bits. Weigh every meal, and feed separately, and see that each dog has his own time over it. Two hours after feeding let each dog have clean fresh water, as much as he chooses; and after coursing let him have a pint of good warm broth, soon after coming home. Let the kennel be cleaned and aired the first thing every morning, and the floor sprinkled with coal-ashes and sawdust; and the dog well groomed until his coat shines. He should be out from three to four hours daily; one day with a horse four miles out and four miles home, trotting after the rate of eight miles one mile, then walk the next, and so on alternate miles. In the morning not early, and in the afternoon before feeding, take them into the fields, and let them be held until the man they will eagerly follow has run in their sight a distance off of a quarter of a mile; then loose them to stretch to him one after the other, at such intervals as to secure their not catching each other. Another day let them be walked out for three hours, letting two at a time loose to play, and give them their gallop in the afternoon. Course the dogs once a week—one long course or two moderate ones, and be sure never to let a dog run a hare except from the slips.

HOWLING AT NIGHT.

Fasten a little strong cord like a muzzle on the animal the last thing at night for two or three successive nights.

Or hang up a good-sized bell in or near the kennel, with a string attached; ring it furiously whenever the dogs commence howling, and then run out and lay the whip well about them. In a night or two all you have to do is merely to pull the string, and they, expecting the same as previously, will be quiet at once.

ITALIAN GREYHOUNDS.

These dogs will do well on biscuit and cheese, but no meat should be given them. Powder some brimstone and give it with the biscuit, wet: it is good for the coat. Roll brimstone should be placed in the basin of water, to which the dog should at all times have access; and by it should be placed an unlimited supply of sailors' hard biscult, a small bone now and then, and three or four times a week a few potatoes and other vegetables with gravy, will keep the dog in good order. They should have plenty of exercise, and must be kept warm at night. When washing is necessary, use carbonate of soda with soap and water.

MALTESE DOGS, WASHING OF.

Take the yolks of two eggs, and water, lukewarm (soft water if obtainable); this will make a good lather. Well rinse the dog afterwards in chilled water, rub as dry as possible, and the dog will finish by licking himself, which he will not do if soap is used.

Borax 1oz.; camphor, ½oz. Beat to a powder, and then pour over them one pint of boiling water, after which add a small quantity of honey, and cover it till cool, then pass it through muslin. The dog will help to keep itself clean by licking. Of course, when this mixture is rubbed well in, it must be washed out again with pure water. The addition of a little soda or borax to the water is far better than soft soap.

Or melt half an ounce of borax in a quart of hot water, and add half an ounce of camphor, broken small; cork, and use when cold.

Again, wash with a very little white soap and rinse well with plenty of water coloured with the blue bag. The drying must be done without rubbing against the direction of the hair.

PUPPIES BITING OR NIBBLING, TO PREVENT.

Mix one ounce of bitter aloes in a pint of water with a little spirit to make it keep. Anoint the article to be preserved with the mixture, and no puppies after a taste or two will touch it. Some good accrues by clipping the temporary fangs, which are very brittle, and easily cut through without pain to the dog.

RETRIEVERS.

Breaking of.—The first lesson should be the word "down." Take the dog into a field, and calling him to your side press him gently to the ground, at the same time repeating the words "down," "good dog;" if he does well, reward him with a small piece of boiled liver. Do this every two or three minutes, and in a week he will have learnt the meaning of the word "down." The next word to be taught is "heel." Put on a collar with cord attached, and draw the cord up, so that he will be quite close to you; then say to him, "heel," and make him follow you for three or four minutes, always rewarding him if he does well, and be moreover sparing of the whip. This done every day will soon make him perfect at the word "heel." We will now go on to the word "fetch," which if the puppies are well bred, they will not take very long to learn. Say "down," and throwing a glove to the dog, say, "fetch it here." He will most probably begin to play with it; if he does, call him to you, take it away very carefully, and throw it down again, and directly he picks it up take it from him, caressing him if he does well, and chiding him gently if he does badly. Repeat this every day for a month, at the end of which time he ought to be able to fetch well. The next thing will be to teach the dog to "drop" at the sound of a gun. Taking the cord in one hand, fire off a pistol with the other, at the same time repeating the word "down." At first he will be frightened, and endeavour to get away; coax him, and keep firing off small charges of powder: it will take a good fortnight to teach him this. After he knows the meaning of the words "down." "to heel," and "fetch," you may take him with you into the field shooting. Directly he hears the report of your gun he is supposed to drop "down;" if he does, go up to the dead bird, and calling the dog, say, "fetch it here;" he will pick it up, and you must take it very gently out of his mouth, rewarding him if he does well. After he will pick the bird up pretty well, you may send him off from your heels instead of going up to the bird, which should always be brought right to your feet or hand; when he will do this, encourage him to "seek" for the bird; if it is only wounded it may get off to considerable distance, and then your dog will have to "seek" carefully for it. Do not lead a dog to make him keep to heel; repeat the word, touch him with a whip or with the foot, and make a sign with the hand indicating the wish; if he be very troublesome in this respect, let him drag a cord from his collar, which tread on when necessary, the same words should not be used to pointers and a retriever: the former teach to lie down at the word "charge," and resume hunting at the word "up; the latter at the words "drop" and "come on," for often it is desirable to move your retriever by word, and not your pointers, and *vice versâ*. The greatest difficulties with young retrievers consist in getting them to use their noses in preference to their eyes, and to be steady under any excitement, not running even a couple of yards when you shoot. Always keep your temper even under the most provoking circumstances, and give the dog a fair trial. Never despair, but keep on, and in due time you will find the advantage of breaking a retriever yourself instead of letting other persons do it for you. Always use the same words. Never let children take the dog out for a walk, as they will soon teach him tricks which will be found very difficult to cure; and do not tire him by giving him too long a lesson at a time.

Dropping.—Have a line on the dog from 15 to 20 yards long. Roll a ball from you, and, retaining the end of the line in your hand, contrive that you and the dog reach the ball about the same time, then have a little play for the possession of the ball, eventually allowing the dog to possess it. Continuing the play, keep the ball in the mouth with your hand till you reach the starting point, when you take it from him, giving the dog something tasty in return, such as a bit of toasted cheese. The dog will soon relish the game amazingly, and will be only too glad to bring the ball up to you for the reward. When you find you can trust him to do so, you of course send him alone after the ball.

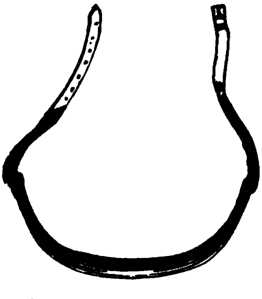
Again, having cut a piece of meat into small pieces, place the object to be retrieved in the dog's mouth, showing him with the disengaged hand a piece of the meat. When he drops the object he should be scolded, and the object quickly replaced. As soon as he has held it for a second or two, it should be taken from him and replaced by the piece of meat. The time for holding the object should be gradually increased.

Diving.—Diving should be taught with a good-sized object, easy to feel and see. Begin in one foot of clear water. Again, attach a float to a sink by a cord; at first allow the float to be on the surface of the water, when the dog will readily fetch it. Shorten the cord till the float is nearly submerged, and in this way increase the depth gradually. Of course reward the dog with something good to eat when he performs well, and don't continue the lesson too long, for then it ceases to be play. Or, take a dog of good courage and very fond of water, feed him yourself, and keep him sharp; put a collar on him, which hold with your right hand, having a bucket of clear water near you; place in the palm of your left hand a piece of meat an inch square; hold your left hand with the meat close to the dog's nose, holding him back by the collar with your right hand so that he can all but take the meat; then move your left hand forward, letting the dog's nose follow it into the bucket of water; sink your hand, and as soon as the meat is just covered with water let the dog take it. Repeat this, getting the meat deeper in the water as the dog progresses. He will soon retrieve a bone from the bottom of the bucket.

This done, take him to a clear river and begin with a bone in a very shallow place. Then put a stone in a towel, and get it into deeper water by degrees. A large indiarubber ball, too large for the dog to get hold of in the water, is a useful float. To this attach the towel, wrapped up with a small lead weight in it, and after a little practice in retrieving from the shallow water, attach it to the float with two or three inches of cord; then, when the dog in his vain attempts to get hold of the float has discovered the towel, and after a little practice has begun to regard the float as an index to where the towel is to be found, the connecting cord may be gradually lengthened. The fewer cords the better, as the dog is liable to get unfairly entangled in them when under water.

A correspondent of the *Field* taught his retriever to dive by using an indiarubber ball, of which the dog became very fond. When the dog would retrieve the ball well from the surface, he weighted the ball and sunk it in a very shallow pool, gradually increasing the depth. He states, however, that he is of opinion that diving causes deafness in the dog.

Hard Mouthed.—No method is known which will cure a very hard mouth. Lead him in a string, and be very careful to avoid letting him go up to his bird in a hurry; check him just as he reaches it, and take it from him by making him drop it into the hand, not by drawing it from his mouth. It is stated that a young dog may be cured by procuring a litter of kittens big enough to scratch, and allowing the dog to carry them, when, if he nips them sufficiently hard to hurt them, they will retaliate with their claws to the best of their ability. In the field the only method to be used is by means of a gag.



Obtain a round piece of iron from three-eighths to half an inch in thickness, made in the form of the pattern, to fit in the back part of the jaws, with a strap to each end to be buckled behind the dog's ears, and another strap, should the dog be inclined to get it off, under the throat, just the same as the neck strap to a horse's bridle. The dog will not mind the bit in a day or two.

Refusing to lift.—When young and during training, get the dog to fetch a rabbit-skin tied into a ball, and reward the dog when he does bring it. Then practise him with a dead rabbit, remembering always to run away from him directly he lifts it; and if he toys and plays with it, send a boy round him to carefully drive him to his master.

If the dog is of older growth, work him a few times with one that *will* retrieve game, and jealousy will make the dog do it.

SHEEP, WORRYING.

1. Shut the dog up with an old ram, who will punish the dog very much. The owner should stand by and cry "ware sheep, ware wool" at every attack of the ram, and also to see that no injury is done the dog.

2. Borrow any dog of a pugnacious disposition, and clothe him in a sheep-skin as well as you can, and then introduce him to the culprit, who will soon discover that he has "caught a tartar."

3. First give the dog a good dose of jalap, or some other physic, so as to make him somewhat uncomfortable in his inside; then take him of an evening to where the sheep are, and give him a sound thrashing before them. After which, tie him (muzzled) to a stout, plucky old ram, and leave them in company all night. Let the cord be of a tolerably good length, so as to give the ram free scope with his horns.

4. Having muzzled the dog, attach a light though strong cord to the dog's collar (the cord should be some twenty yards long), lead him into the field where the sheep are; take him as near to them as possible, and on his attempting to "worry" draw him up to you at once, and "thong" him severely with a stout dog-whip (previously concealed from the dog) admonish him with the words "ware sheep;" whilst thonging him. Repeat this lesson for three successive days, for an hour at a time. After this take the dog unmuzzled and, allowing him the full range of the cord near the sheep, repeat the "thonging dose" if necessary. Repeat this lesson three or four times, and if his "worrying propensities" seem at all checked, then take him out, muzzled, but otherwise free; and, if he does not "worry," the muzzle may be taken off. But if those lessons fail to have a good effect, he may be said to be incurable.

5. In a gateway in a fence let a strong stake be driven into the ground, and to it let the offender be tied so closely that he cannot stand up; then let, say, half a dozen hurdles be pitched on each side at an angle of 45° from the fence, so as to form a gradual approach to the opening in which the dog is tied, which should not be more than four feet wide; then take one sheep on the opposite side of the fence to that where the hurdles are pitched, to attract the others, and quickly drive, with a dog or two at their heels, eight or ten sheep through the opening from the hurdle side, and they will, in their hurry to get through, give the delinquent such a pummelling with their feet as they run over him as he will not easily forget. The sheep should be driven very fast, or they will either run on one side, or jump over without hurting him.

A correspondent thus cured a dog of his: "Being muzzled, and with strong straps attached to his collar, he was placed between two full-grown sheep, round whose necks were stout leather collars, to which the straps were securely fastened. The sheep were then let go, and, in their fright at such a neighbour, they scampered about in all directions, of course dragging the dog with them. When fairly tired out, they were caught, and the dog was released, quite exhausted with his involuntary exercise and thoroughly cured of chasing sheep."

Another writer says: "The only cure that I have found to do good is to call the dog off, and if he does not come have your gun ready loaded with salt or saltpetre, and shoot him in the hind quarters. It will not hurt him any more than it does a man to rub salt into a cut."

Again, "Dress up a groom in a sheep's skin, place him in the middle of a field, and let him imitate the posture of a sheep as much as possible; then let the dog run in at him. As the dog approaches let the man bleat like a sheep; the dog by this will be encouraged, and run in upon him. When about six yards off, let the man continue his position, and fire six barrels from a revolver at the dog. Five should be unshotted, the last barrel shotted, and as he runs away, a few corns peppering him without penetrating the skin will effectually prevent any more sheep chasing."

SKYE TERRIERS, TO KEEP CLEAN AND HEALTHY.

The dog should not be washed with either soap or soda, and constant warm water is very weakening. Let the dog be simply sponged on his legs and belly with cold water (when he is muddy from being out, but not unless), and well rubbed dry again; and only very seldom, say once a month, cause the long hair on his back to be wetted, and then no soap and no hot water; but if the weather is very cold, let the water be tepid; and the dog will be much healthier and handsomer, and his coat much more silky and quite as clean as when he is scrubbed so often. Comb him or brush him with a soft brush. Great care must always be used in rubbing the long hair quite dry, and separating it, otherwise it will form into clots, which spoil the beauty of the Skye terrier.

SPANIELS, BREAKING OF.

The way to break a spaniel is to take him out a short distance whilst very young, say at three months, increasing the distance as the dog gets stronger. If you wish to have anything like a perfect dog, he should be almost constantly with you, and made a friend and companion. When three months old get a piece of rabbit-skin, stuff it with hay, and sew it up. Practise him to carry it about three times a week for a few minutes each time; by throwing it at first, and afterwards by hiding it on the ground and making him hunt for it, he will soon understand what you want him to do. When he is six months old (if in summer), kill a few small rabbits over him and let him fetch them; if in winter, a partridge; but you must not put him at an early age to carry large rabbits or hares—everything should be made as easy as possible for him at the first, and till he has got plenty of strength. The example of other dogs will do much if judiciously made use of, both for retrieving and water. With regard to the latter, the first lessons should be given in warm weather. Cross a narrow river and let him follow, increasing the breadth as he improves in taking the water. Never let your dog carry sticks, stones, or anything hard. When the puppy is six or seven months old, drag a small rabbit by a string, hide it, put him on the trail, and let him bring it. A winged partridge is good practice for a puppy eight or nine months old. To make him tender-mouthed, get a small rabbit or a bird in your hand, let him smell at it, and if he attempts to bite it check him; but let him mouth it gently, so long as he does not attempt to bite it hard—he will soon know what you mean. Let him retrieve a few yards at a time. Always make him bring to hand (a tedious process, requiring much good temper in the trainer and training). A great deal depends upon making him a companion and gaining his confidence. When puppies are old enough, teach them to hunt; to take them with a steady old dog is the best way, and when they begin to hunt and know what they are about, then break them to downcharge and range within gun-shot. This is done best by taking them out separately, as spaniels require more attention in their education than any other dog. Keep him at your heels, and never suffer him to hunt on his own account, but by your especial authority; and, as his most useful sphere is among aquatic birds, teach him by signs of the hand; if at times the voice is necessary, let it be short and sharp. For good conduct encourage him by acts known to yourself, and he will appreciate the one and the other.

TRANSPORTATION OF DOGS.

Have wicker cases of various sizes, and provided they are strongly made, and the dog has no inclination to gnaw his way out, they answer very well. They are cheaper than travelling boxes, and cooler also. They should be, to use the terms of the trade, "randed" up, and not "slewed" up; that is, the withes should bo put in singly (the lateral withes), and not three or four together, as in wine hampers. For one dog this basket ought to be three feet six inches long, twenty inches high, and two feet wide. The opening is best made at the end, and there should be a hole at one corner with a tin or wooden trough, by means of which contrivance water is easily furnished. The single baskets, made stout enough, cost from twelve shillings to a guinea each, but boxes cost a little more. They are to be had of deal or elm, the latter wood the best, and the door is an iron grating. And except that they are, when properly made and banded with small hoop iron, more enduring than wicker-work, they are, for the transport of dogs, in every way inferior.

There is no doubt that dogs will do well to travel or start at night; for pointers, and especially setters, suffer more from the heat than anything else.

Arrived at the end of railways, it is always best to take care that the boxes or baskets go on. It is very common for the coachman and drivers to plead that they may bo left for the return journey, that the dogs will best follow for the few miles of posting, and that it is "impossible" to carry those large packages "anyhow."

Let the dogs travel in baskets *all the way* to their destination. Arrived at their journey's end, each basket will answer for dog kennels until they are wanted for the return home, if the following advice is complied with: They should be raised with stones or a couple of faggot sticks from the ground, and a trench should be cut to carry off the rainfall. The sides may bo protected with heather or turf, and a heap of the same material will make a very effectual roof.

STUNTING PUPPIES.

Begin giving gin when about six weeks old, and continue doing so for some time. Have meat cut up fine and then pour the gin over it; give a dose to the puppy every day, but every other day would answer the purpose, though perhaps not quite so effectually.

TOY DOGS, BREEDING OF

Dog and bitch should both be over fifteen months old if it is wished to breed strong, healthy whelps. Good feeding once a day is very well when not in pup, but when pregnant the bitch should have good nourishing food (quite cold) twice daily. Give the bitch in the ninth week a daily meal of boiled calves' or sheep's liver, which has a slight laxative effect and is nourishing at the same time. Give weak brandy and water in cases of difficult parturition. Give the bitch plenty of hay or straw, and she will make a good comfortable bed, far more to her own satisfaction than any her master can prepare for her.

FERRETS.

HUTCH FOR.

Whatever place your ferrets have for their habitation, it should be very dry, and exposed to as much pure and open air as will be found under a dry open shed, for free ventilation without draft is everything to them. Half the ferrets die or become useless from a chilliness which comes over them by being kept too warm. Let their wired or barred cages have plenty of light, room, and air, and be two-roomed—a bedroom full of clean straw or hay, and a sittingroom, swept out and garnished with sand or sawdust every day.

The ferret box should be 5ft. long by 2½ft. broad, and 2ft. in height, and should be divided in the following way: a sleeping apartment (20 inches) should be boarded off, with a round hole exactly in the middle, about two inches from the floor, by which means the straw is prevented being scattered over the other part of the box. Next should be 28 inches of plain board, for the ferrets to be fed on and for their exercise; the remaining 12 inches of the floor should consist of wire, the wires sufficiently apart to allow their dung to fall through. When the ferrets are put into this kind of box, take care to place a piece of their dung on the wires in the corner you wish them to make use of. This kind of bex should stand on four legs, about a yard from the ground.

It is as well to have a false wire bottom to the sleeping as well as to the exercising compartment, to allow the .moisture tod rain off. The sleeping compartment should be covered with coarse canvas or perforated zinc.

Some advocate a small brick and tile shed, and a floor sloping to a drain which carries away all the moisture. When at the age of four months, remove the partitions, and allow the mothers and their families the run of the shed; this is preferable to removing them from the mothers. A few battles at feeding time will soon restore them to harmony.

Again: The ferret hutch should be large and roomy; the bottom made sloping, so as to drain off the wet; and a large square of wire-work in front. The inside should be fitted with a raised platform for sleeping purposes. The bed in ordinary times should be changed thrice a week; when the young ones have the distemper, as often as twice a day. Cut chaff or husks of wheat make good beds for the young ones.

The following is a good plan of a ferret box: The box itself should be 3ft. 6in. long, 1ft. 6in. wide, and 1ft. 6in. deep. The feeding compartment (formed at one end) must be one foot taken out of the whole space, the sleeping place adjoining it 1ft. 3in., and the other compartment 1ft. 3in. also, To divide each place from the other, strips of wood must be nailed inside the box to the back and front, leaving spaces between the strips to allow of a thin board sliding down pretty tight. About four inches from the foot of these partitions cut out a round hole three inches in diameter. Over each of these holes make a small door to work on a screw. To each of these doors have a stiff wire, put on to the door with a screw, but with the end of the wire projecting through a hole in the front of the ferret box. Each of the three compartments must have a separate lid. For the last compartment have two wooden trays made, lined and covered on the sides with zinc plate. Have to these trays wire handles, nailed at two opposite corners, and rising up like a bow. The trays being made to fit easily into this compartment are lifted out by the two handles. The box is now complete. The sliding door to cover the hole in the feeding compartment may be on which ever side is preferred. The other sliding door must be in the sleeping side, so as not to interfere with the slipping down of the tray. The sides of these trays must be four inches high. They will thus come just under the hole in the division. The sides should be about six inches high except at the hole, where a piece can be hollowed out. Into the tray put some dry sand or sawdust, about an inch or two deep, and every day or at most every two days, empty it out, wash the tray, and put it in the air to dry, substituting the other. Let the ferrets have a warm bed of hay and wool. When you feed or clean them, pull the wire of the place you are about to open, and thus close the door. Keep the box in a dry place—not cold—and do not give the ferrets meat very often.

A good-sized dog crib is a good ferret hutch. Make one side of the cover to open like a box-lid, and close in the usual opening to a diameter of 6in. In front of the crib place a wire cage resting on the grass, the width of the crib and about five feet long, so that the ferrets can get into the open air whenever they please.

Again: Procure an empty sugar-cask, knock out the top and bottom, see that there are no nails unclenched in the cask, place it on a large flag in a dry outhouse; put some straw on the bottom, and over that say six inches of sweet short hay; the top of the cask should be left uncovered and should be about four feet high. Their feeding vessel should be made of tin, eight inches across by three deep. When feeding, each morning shake a handful of hay over the bed, and clean out the cask once every week, which is easily done by removing the ferrets, turning over the cask, clean off the flag, replace the cask, put some fresh straw on the bottom, and the dry portion of the hay (which the ferrets used for their nest) over. Keep the bucks in one cask, and the does in another. When the does are in young allow each her own cask and keep them very quiet, and feed with bread and milk only. Or get a wire cage such as rats are kept in, but of larger and stouter wire. A cage three feet long, two feet broad, and eight inches high, will hold half a dozen ferrets well. Get a box without a top—an old cigar-case will do—cut a round hole in its side, and place it in the cage. If there are two or three ferrets in the cage, do not give them a bit of hay, straw, or bedding of any kind. If there is only one ferret, you may give him a little hay in the box. Have two doors in the cage, both made on the top—a large one to let in the box, a smaller door to feed and handle the ferrets. Place the cage in a covered place, raised on a couple of sticks a foot or two from the ground, The ferrets come to a corner, and all the filth drops to the ground. *Be sure that the box you put in the cage has no top*, so that all their perspiration may rise clean away. In the summer they will be well and healthy in the bare cage, without a box, and when your man is cleaning out the floor of the house, if he dashes a bucket of water over the cage, ferrets and all, it will do them no harm. If ferrets are inclined to give you a nip when handling them, get an old glove and leave it in the cage for a day or two, and afterwards let it always lie on the top of the cage, handy for use. Never snap at a ferret, nor draw your hand away with a jerk."

Mr. Laver, of Colchester, speaking of the keeping of ferrets, thus describes the plan he pursued: "I kept them in a place about fifteen feet long and eight feet wide, sides closely boarded, and with a board standing out nearly horizontally near the top, bottom bricked, and one-half the top covered, the remainder entirely open and facing the south—in fact the place was built for pigs, but the covered part was not inclosed in front. I put a small armful of straw under the covered part for a bed, and the remaining part was kept brushed clean. My ferrets were invariably healthy. When my doe was about to litter she had the whole place to herself; and as soon as the young could feed I gave them meat or birds, waiting whilst they had a meal and then placing the remaining food out of their reach, as I found the most frequent cause of cannibalism was their either getting messed with blood or falling into the milk-dish, when there was any given to the old one; and to prevent this I always placed (after they had finished their meal), the milk, &c., on a board raised upon bricks, but not sufficiently high to be out of the reach of the mother."

Another correspondent writes, "I strongly recommend" when convenient keeping them in small paved courts, with boxes about 18 inches square, with a hole for them to be at liberty in the court at their pleasure. Kept in this way they are very amusing, playful, and lose all fear and spitefulness. They lose also the propensity to "lie to hole." I keep the dog ferret separate from the bitches by a low partition of elm plank about two feet high, with a coping twelve inches broad, which I can easily step over, but it is impassable to the ferrets. My inclosure is not impervious to cats, but I have never suffered from this.

The best time for putting the Jill to the Jack is in June. It is necessary to allow the Jills to breed, or they will pine. The young may be removed from the mother in ten days or a fortnight after they can see.

Not more than two or three ferrets should occupy one sleeping compartment.

Some people closely squeeze down the straw into a separate box at the end of the cage, which should have a hole in it just large enough for the ferret to enter. They say that this prevents the ferret dirtying his bed.

In breeding it is always desirable to breed from strong and healthy parents; and there is no objection to cross the blacks with the whites, selecting known good ferrets for hunting, strength, activity and tameness—for savage and shy ferrets are very troublesome. It is quite possible to cross them with a wild fitchet, but till crossed and crossed again the young are too untamable to be pleasantly used.

The Jill ferret should be allowed to breed when inclined, but too close in and in breeding should be avoided. She will produce from seven to twelve young ones, goes six weeks, and in about six weeks the young begin to see. About this time, and later, they are subject to the sweating sickness, which often proves fatal, and the only remedy against it is the greatest cleanliness, and a frequent change of dry chaff or soft dry hay bedding.

Never disturb the nest for at least the first four weeks, as the mother will often kill her young; besides which, they are so tender as not to bear any kind of handling. A small quantity of clean straw, dry, placed in the front of the breeding box, will enable the mother to refurnish her own nest.

Polecats are the easiest reared, and prove the best rabbiters; the white, which are mostly speaking much smaller, serve for rats. White ferrets are much more tractable than the dark ones, equal in courage, and more easily caught and seen; also not so liable to be mistaken and snapped by a dog, for a rat. A ferret should have a long sharp head like a snake, not round and short like a water vole. Medium-sized ferrets are best for rabbits, small-size for rats; the largest sort of ferret are inclined to be lazy. A she ferret will work a year or eighteen months longer than the male.

A fresh-killed cat or a rabbit or bird is their best food (but ferrets do not relish carrion-birds), and clean water to lap. It is a good plan to dust a little brimstone over them occasionally, and to give them a little brimstone and milk now and then.

Ferrets should be fed once a day, the bread and milk given warm, and the feeding pans should be frequently scalded. They should be kept rather low in flesh, but not starved.

Some feed twice a day on bread and milk; a few birds, such as sparrows, linnets, &c., are good dainties twice or three times a week. The livers of hares and rabbits are greedily devoured by them. What meat you do give should be the best.

Many advocate oatmeal porridge and milk, but without salt. When the ferrets have eaten their fill, take out the dish and fill it with clean water and return it to the cage.

When in the distemper, milk and bread alone should be given. Should this plan be followed out, no outward application whatever is generally necessary.

Straw is the best bed for them in winter, and deal shavings in summer, as it keeps away fleas and ticks. Regular feeding is always essential. They require some physic at times—one teaspoonful of castor-oil in a little milk. Be sure also that any ferret you introduce temporarily is clean, and don't lend your own ferrets unless you are convinced their chance associates are clean also.

Many tired and wounded ferrets lose their lives from being shut up with those that have not been at work. It is always better to put a wounded ferret by itself in well-aired, comfortable quarters. Ferrets are as cruel as sharks; they have no mercy even on their own species. It is no uncommon thing for a wounded ferret to be killed and eaten by his own intimate acquaintances. For carrying the ferrets I prefer the bag to a box—it is both handier and quieter.

TRAINING OF.

The great secret is to handle them early, to make them quite tame, and to come to hand without snapping and biting, and running back and away from you. Nothing spoils a ferret more than timid handling or snatching at him for fear he should bite you; by doing this you will soon spoil the best ferret, and it is better to let him bite you than to snatch at him. If he is very incorrigible, put on a very thick glove or mitten; but whatever you do, approach him boldly with your hands, and never mind his biting. He is capable of being corrected by constant handling and by kind treatment, and an occasional gentle box on the ear.

Be careful to call the young ones before feeding, to accustom them to your voice, and handle them as much as possible. Never be rough with them, and take them up gently; if they offer to bite do not throw them down or beat them. At three weeks old begin to exercise them, and if used for rats teach them to kill. To do this let go one or two of the young ferrets and the old Jill in a moderate-sized room, and turn out a half-grown rat, which, when the old one has killed, let the young ones have for a short time to fight for, then call them off, and give them a little milk. Having done this two or three times, turn the young ones out alone with the rat, and if they kill, go on day by day increasing the size of the rat, taking care to call them off shortly after they have killed, and give them a little milk. Before using give them only half their regular quantity of food. Some give none for two days before, but this is bad. It is necessary to use the young ones as much as possible, and for some time in company with the old Jill. This is the training for rats. For rabbits it is only necessary to hunt them with the old Jill. The small ones are best for using loose and unmuzzled, or unmuzzled with the cord, if you wish the rabbits to bolt freely to the net or the gun; but a large ferret should always be muzzled, whether used with a cord or not. Bites behind the ear are more dangerous even than over the nose. Run them with a cord and collar, to which is attached a small steel swivel. A very limited allowance of food on the day previous to their hunting will incline them both to hunt better and truer.

DISEASES.

Distemper.—Keep them in an even temperature, dry and moderately warm, letting them have plenty of fresh air, and feeding alternately on milk and beef tea, and when they begin to improve, boil the milk and add a little fine flour and mutton suet to it. A raw hen's egg is the best thing to give ferrets when unwell, or in fact at any time.

Eating Young.—Ferrets will eat their young if much disturbed at the breeding time. Some say that this habit may be lessened by supplying the animal with blood. Even with the best management, however, ferrets will frequently eat their young.

Foot-rot.—Foot-rot is generally brought on by damp and filth, by not keeping the animals well bedded, and by putting them away into their hutch or box without well cleaning their claws after being worked in wet weather.

Discontinue the flesh-feeding, and also remove the ferrets to another cage. Plenty of fresh air, a well-drained floor, and clean wheat straw, are essential to the well-doing of ferrets. Do not mistake the natural changing of the coat for disease, as the rot seldom extends beyond the feet and ankles.

As soon as you begin to see any symptoms of rot either in the feet or tail, scrape off all the affected parts with the thumb nail, not minding its bleeding, so that you get all the stuff off, and then dip the part affected into spirits of turpentine. Keep them very clean, giving them fresh wheat-straw every day. Apply to their feet twice a day, train-oil ½ pint, spirits of turpentine ½ pint, black brimstone 1 ounce, powdered hellebore ½ ounce. This may be applied by pouring a little into a saucer and putting the feet in. They should be well fed with small birds and oatmeal boiled in milk, but not rats and coarse meat.

Again: One part common oil of tar, one part train oil; mix, and apply to the parts affected with camel-hair brush or a feather. A second dressing will effect a cure if the first should fail.

Or: Mix a little flowers of brimstone and sweet oil together (half and half) and rub the parts affected every night.

Some use a little mercurial ointment on their claws, and in a few days shorten them with a pair of sharp scissors, and keep them in clean wheat straw.

The disease can be cured by severe burning with butyr of antimony. The claws all come off, along with the fungous growth which surrounds them, and young ones grow rapidly. Give them every day a little sulphur in new milk, and apply a mixture of equal parts, sweet oil and turpentine, to the feet, and sore parts on the body and tail. Bathe the feet daily in a solution of alum and water, and paint them over after with salad oil. Wash their feet and tails (on the end of which you will find a knot or lump) in a solution of soft-soap and water, and then dress them with ointment, composed of black sulphur, train-oil (sufficient to make a paste), and a small quantity of spirit of turpentine to give it a drying nature. They must be well supplied with clean straw, which should be changed frequently, and have a little common brimstone or sulphur in their milk. The washing and dressing must be repeated every three or four days until well. Mercurial ointment, or sheep salve, is a good thing, but requires to be used with caution, as they will lick it, and perhaps poison themselves. Some use red precipitate (finely powdered) 1dr., spirit of turpentine 1dr., and linseed oil 4dr. The mixture should be well shaken and applied to the crevices round the roots of the nails with a feather every morning, as much as possible of the scab being removed. Others rub the part affected every two or three days with a bit of flannel dipped in turpentine, to which one-fourth part of creosote has been added. At the end of about a week the nails may be pared to their proper length, and the crust removed.

Insects in ears.—These are like cheese mites, and should be killed with sweet oil, or they will in time kill the ferret.

Wounds.—Sweet oil, olive oil and laudanum, or burnt butter are all good for rat bites.

HUNTING.

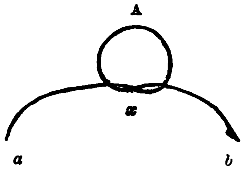
If you are ferreting in open ground, and have hundreds of holes at your command, work up the wind, drop your ferret into the most leeward hole, take a step on one side, so as not to be directly in front of the hole, *and stand still.* Never put your ferret into a single hole; by a single hole is meant one without a bolt—they are often breeding holes; and should there be no young, but an old one at home, she is afraid to face the ferret, turns round, scuttles to the back of the hole, sticks her head in a corner and her tail to the ferret, and lets him scratch. If you have bolted two or three rabbits from a burrow, and your ferret comes out, do not put him in again, even though you know there are more rabbits in the burrow; you will get more shots by going to fresh holes. When ferreting along the face of a brae that is free from covert, if you have a man with you working the ferrets, let him keep along the foot of the hill, and when he has dropped the ferret into the lowest hole, let him lie down out of sight, behind a bush or bank. You yourself should keep along the hill face, ten or twelve yards above the highest hole. When ferreting along a brae face, pass on a yard or two beyond the hole the ferret is in, so as to make the rabbits break back towards the ground you have already gone over; so you have less chance of being bothered with frightened and wounded rabbits farther on. If you have a man with you, the best plan of carrying the ferrets is a bag, with a bit of wire, *not string*, to twist round the mouth of it. If you are by yourself, a fishing-basket with a sliding panel over the trout hole, is most convenient. If your ferret sticks in a hole, open a fresh-killed rabbit, daub the back of another ferret with the blood and liver, and start him into the hole, with a line, if there are no roots.

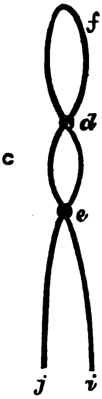
Others strike the mouth of the hole with a heavy stick, so as to cause a strong vibration, which engages the attention of the ferret, and often makes him come out.

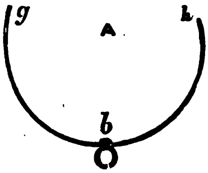
One good plan is to open a fresh-killed rabbit, place it inside one of the holes where the ferret is, in the side from where the wind comes if possible, then waft with the hat or game bag, or anything you may have, the scent from the rabbit into the hole, when they will in all probability come to it. Some say that if this be habitually done, the hunting powers of the ferret may be injured. We have, however, never found this the case. Another plan is to let off a squib, or even fire a little powder into the hole; it will frequently drive them out. One general plan is to have an old ferret with a line on, run him in to where they are stuck, then pull him back with the line, when in all probability they will follow him out. Should they have got beyond the rabbit, and cannot get out until they have eaten or chewed their way through, stop all the holes but one, and place a wire trap to that one, when in ninety-nine cases out of a hundred, the ferret will be caught, and without injury.

In ferreting with loose ferrets, it is well to have a few boys out, so that if a ferret should get laid up, a boy can be set to watch for him. Another plan is to place some soft hay and wool in the mouths of the holes, and then stop them up (the least aperture will suffice for air). Go early the next morning, and the ferret will generally be found curled up in the wool.

In hunting, however, the best plan is to muzzle the ferrets. Most gunmakers sell a muzzle for the purpose, but a capital substitute may be thus made:







In the annexed diagram, the loop A slips over the under jaw, and the tie *x* is beneath it. Thus the two ends *a* and *b*, when drawn together, will fasten over the animal's upper jaw, and keep his mouth shut as tight as you please. The two ends knotted over his nose pass up the centre of his forehead, and are attached to his collar at the nape of his neck.

Again: A small silver ring is put in the upper lip on each side; when required for use, a bit of waxed thread is passed from one ring to the other under the lower jaw, and the ends tied. This is most effectual.

Again: Get some fine whipcord or strong twine; cut off a piece long enough to go round the animal's neck, leaving two ends about two inches long each; double this, A, and tie a small loop in it, *b*; then take another piece about eight inches long, C; double it, tying two knots (one at *d* and the other at *e*), at a sufficient distance to admit the ferret's nose in the loop between them. The muzzle is now complete, so put it on. First tie the string A round his neck, close to the head, the loop *b* being underneath; next place the ferret's nose in the loop *d e*, *g* or *h* being passed through the loop *d f* and tied, will fasten the upper part; next pass *i* or *j* through the loop *b*; tie them and the ferret is muzzled. Care must be taken to tie all the knots firmly, to prevent their slipping. Some ferrets have a nasty trick of coquetting at the mouth of a hole, and running backwards when you go to catch them. This is learnt from being snapped at, instead of being lifted gently. If you have one of this sort, tie a foot or two of cord to his collar; when he runs back, you can lay hold of it.

Some say that a better plan than that of shaking a rabbit in the hole where the ferret makes its appearance, is always to give your ferret a little spittle on the palm of your hand whenever you take him up. A ferret soon learns the rabbit trick, and after being deceived two or three times fights shy of it.

FOXES.

INTRODUCTION OF.

Put down two young vixen foxes into a well-fenced sunny covert, full of rabbits and rabbit-holes; probably one of the two will lay up her cubs in the covert. Artificial earths are dangerous contrivances; the cubs may easily be dug out. Foxes as a rule do not like small coverts.

GUNS.

BROWNING BARRKLS OF.

Quarter of an ounce blue vitriol, ¼oz. tincture of steel, 3dr. spirits of nitre, ¼oz. sulphur vivan, 3gr. corrosive sublimate, 7½oz. rain water. Mix together, and shake before using. Clean the barrels well with a little fine emery powder, wetted with water in which a small portion of potash is dissolved, in order to clean the barrels of spots and any oil that may be on them. After which wipe quite clean, and apply the composition with a piece of soft flannel. It must be applied gently; and if the barrels are very slightly warmed by the fire it assists the evaporation, and allows the application to deposit on the barrels. When well dressed as above, and dry, let them remain for about three days; after which time apply what is called a "scratch" brush—it is made of fine steel wire, instead of bristles, and is what the hatters use to straighten up old silk hats (and to clean velvet). You can get one at any of the tool shops. This brush must be applied very gently, just to remove the rough incrustation: after which, apply the dressing as before, and leave the barrels for another four or five days; after that again apply the scratch brush very gently indeed, just to smoothe the barrels, and polish with chamois leather. If the acid is not killed by plunging the barrels in boiling water, it will appear again; and this disposition is increased tenfold if the ingredients be not well mixed, and the composition strained through fine muslin before applying it.

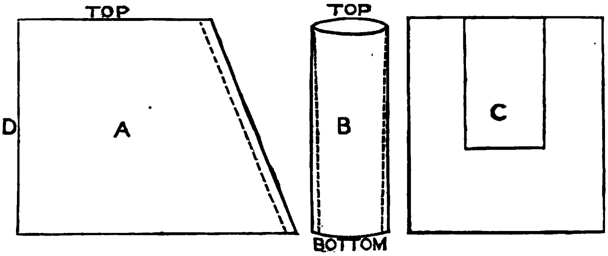
One ounce tincture of iron, 1 oz. spirits of wine, ¼oz. sublimate, ¼oz. nitric acid, ¼oz. blue vitriol, 2lb. water. Apply with a piece of flannel twice a-day; scratch it (with a propor scratch-brush) clean each time; when dark enough, scratch clean as possible, and pour boiling water over it. Polish with a fine linen cloth, and, if requisite, a touch of beeswax and turpentine.

Take of tincture of sesquichloride of iron ½oz., corrosive sublimate 1dr., sulphate of copper ½dr., nitric acid 1dr. to 1½dr., spirits of wine 6dr., water

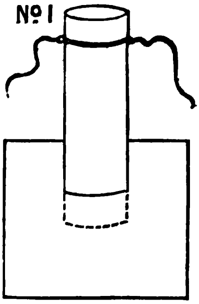
8oz. Dissolve the corrosive sublimate in the spirits of wine, then add the solution to the other ingredients, and let the whole stand for a month or six weeks, when it will be fit for use. The barrels are first cleaned carefully with lime, and this being removed, the browning mixture is laid on with a sponge five or six times a day, till the colour is dark enough for the fancy. Once or twice a day a scratch-brush is used to remove the rough oxide and allow the acid to get a deeper bite. When it is considered that enough has been done, boiling water is poured over the barrels for several minutes, and while still hot, they are rubbed with flannels and finished with a leather and a little beeswax and turpentine.

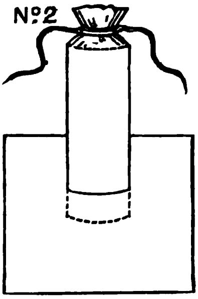
TALLOW CARTRIDGES.

A represents a piece of common cartridge paper; B a roller of boxwood, or any hard wood turned to the size to admit the paper A being rolled once round it, and then fitting into the chamber C; C a chamber turned out of a solid piece of wood, the chamber to be the exact size of bore of gun the cartridges are intended for. To make the cartridges cut a piece of paper in the shape of the cut A, cutting the top to the width requisite to allow the paper at top to overlap nearly a quarter of an inch; then gum the edge of the paper to about the eight of an inch, as marked by the dotted line on the drawing A. Place the roller B on to the paper at D, and roll up firmly; wind round it a little thread to keep the paper from slipping. In a few minutes it will be dry. You can then push the roller out of the case, and proceed in the same way till you have enough cases. Secondly, take the roller and return it to the case, excepting that you leave the roller exposed at the top, say for 16-gauge about three-eighths of an inch; place the case and roller in the chamber, bottom upwards, then take some fine strong twine and place round as in drawing No. 1. When drawn tight, tie firmly, and it will appear as in No. 2; then reverse the roller and case, bringing the tied end down to bottom of chamber, press down hard



to flatten the bottom of case, draw out the roller, pour into the case some melted tallow of about the consistency of cream, and then put in your charge of shot, having sufficient quantity of tallow to just cover the shot. Put by until cool; when set firm, place on the top of the tallow a leather wad (the size for 16-gauge cartridge will be 18-gauge). Any leather not too thick will do, and you can cut the wads out with a punch. Turn down the case neatly over the leather wad, and make fast with sealing - wax. When loading, place the tied end of the cartridge next to the powder. These directions are for both muzzle and breech loaders, the only difference being in the roller, which for muzzle-loaders must be made one-sixteenth of an inch smaller at the bottom end, as marked by the dots in drawing B. After a little practice the cartridges do not take long to make.



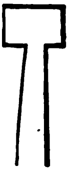


A rough and ready way of making similar cartridges, is to procure a tin cylinder that will exactly fit into the muzzle of the gun about five inches long, something like a candle-mould. Stick a cork in the bottom end, and set it upright on a table; put some shot in; melt some common candle-grease in a ladle, which pour on the shot until they are covered. Let this stand to cool. Take out the cork when the tallow is quite hard, and shove out the cartridge. Wrap a piece of tough thin paper round, and it is ready for use. If you have a dozen little cylinders, it will save much time and trouble.

CLEANER FOR.

Have a rod, made with a crosspiece at the top about six inches long. By placing the feet on this, and working the barrels up and down with the hand, the work of cleaning can be easier done than by the old method.

Or try a cleaning rod, with the end notched thus, and a piece of coarse flannel laid on the muzzle of the gun and pushed down with the rod. It scarcely ever slips off, and saves all the trouble of winding tow, to say nothing of the advantage it has in being all wood, not being possible to scratch the barrel.



A very good kind of cleaern is a leather piston, consisting of five or six pieces of leather tightly fastened between two brass washers, and turned up to fit the barrel.

CLEANING OF.

Wash first with cold rain water, then wash with turpentine; mix one pint of oil to two of turpentine, and finally clean with this mixture, drying the barrels with chamois leather. Many use turpentine only, without anything else; it certainly cleans the gun, and does not rust. Soap and water will remove lead or very heavy fouling. Others, again, use turpentine only first, and finish off with oil and turpentine mixed in equal parts. We have heard of men who never washed their guns, only fired off a charge of oil when they wanted cleaning.

Quicksilver rinsed through the barrels will remove dirt, and by rolling the quicksilver over flannel the dirt will become separated. Some use simply a thickly-oiled wad occasionally, when shooting, and they say that this answers every purpose of washing. Oil alone, without water, answers the purpose admirably well, and saves the trouble of washing.

The following is the orthodox way: Take out the barrels, and put the breech ends into a bucket half full of cold water. Have a cleaning rod ready, wrapped with goo tow, and wash the barrels well out with that. Do not let the barrels stand in the water, as they will go white if left any time, Having washed them well, rear them muzzle up against a wall, and pour boiling water into them, keeping them full for about three minutes. Let the water run out, and in about half a minute from that time wrap your handkerchief round the muzzles, so that you can lay hold without burning yourself, and form a mouthpiece with your hand, and then blow sharply into the barrels. This will drive out the drop of water that is sure to be sticking in the nipples; the barrels are dried in a third of the time when you have done it. With dry tow you then rub the barrels well out. When dry, put a drop or two of oil on the cleaning-top, and send that down, but do not overdo it.

To clean the ramrod, rub it with linseed oiled rag, and for the top and worm end take a bit of the finest glass cloth, fold it once round the end you are cleaning, and press it in the fingers of the left hand. Put up your right knee on a chair, and with your right hand opon, roll the ramrod backwards and forwards along your knee.

The stock should be well rubbed with linseed oil on a rag, and the rubbing not grudged.

Some say that either cold or warm water may be used; the former is preferable to begin with. Commence by filling your barrels with water, and, after allowing the water to remain about a minute shake it up and down, the muzzles being closed by the palm of one hand and the nipples by the other; then remove the hand from the muzzles, reversing the barrels suddenly with the muzzles towards the ground, when the greater portion of the dirt and foulness will be carried away; *after* this, immerse the barrels in clean water, deep enough to cover the nipples, introducing your cleaning-rod alternately into each barrel, with sufficient tow to fit the calibre closely, working it up and down smartly for a couple of minutes, especially within a few inches of the breech; then withdraw your cleaning-rod and take your barrels out of the water, and, after reversing them, adopt the same plan as at the commencement, which will leave them quite clean, when they must be wiped dry by smart friction with several changes of dry and clean tow, the tow fixed in such manner during the last part of this process as will facilitate its entry into the breech; if tow be objected to, in consideration of the possible risk of a portion of it being left in the breech, then pieces of rag, cloth, or flannel may be used. After a gun be cleaned, before it be put away, a small portion of the best olive oil may be applied without disadvantage, a clean rag being used for the purpose at the end of the cleaning-rod.

Take a wide-mouthed bottle such as is used for hair-grease, and fill it with spirit of turpentine. After wrapping round the end of the wash-rod the necessary amount of calico or old shirting, dip it into the turpentine and apply it to the interior of the barrels; on withdrawing the wash-rod the calico will have the appearance of having been dipped in ink. Put fresh calico on the wash-rod and repeat the process until the calico is withdrawn clean. After this again use fresh calico, and wet it with oil and turpentine, say half and half, and rub the barrels thoroughly with it, when the process will be complete.

A simple plan is to take a piece of flannel about three inches square, saturated with oil, and lay it in the muzzle of the gun; then take the cleaning-rod and thrust it down the barrels, moving it up and down as if cleaning with water—when the piece of flannel is dirty take another, and so on until the gun is quite clean. Finally, wipe the oil out of the gun with dry flannel, and wash the dirty pieces in warm water, for use on another occasion. This is a capital plan also for rifles.

LOCK, TO TAKE TO PIECES.

Put the lock on full cock, and put the spring-cramp on the mainspring, but without screwing it beyond touching at each side; let down the hammer, and the spring comes off. Take out all the screws of the bridle and put them on the table before you in the form they occupy in the lock, by which means you do not mix them. Take off the bridle and then the scear. Unscrew the tumbler-screw, and then, holding the lock-plate in the left hand, with the hammer downwards, give it (the hammer) a succession of raps with the handle of the screw-driver, and it will fall off. Having cleaned the lock, and given each part as you do so a final rub with wash-leather, put it together in the same order it came to pieces. Use homœopathic doses only of oil, and let *that* be refined oil from the watchmaker.

OIL FOR.

The oil from chicken fat is one of the best oils for guns. Melt the fat in a cup on the hob, and strain off through a rag the oil to be used, and bottle it. Or boil a fat cow's hoof, skim off the fat when quite cold, re-melt it, and treat it in the same way.

The application of *common* sweet oil to *any* part of the gun is very objectionable, inasmuch as it adheres, cakes, and retains dirt and dust, and when applied externally, renders the handling of the gun very disagreeable and, moreover, frequently blocks up the nipples and occasions a miss-fire or two. Sweet oil, if used, should always have a charge of shot in the bottle, and the longer it is kept there the better.

RIFLE CLEANING.

Get two ash sticks, round and smooth, planed to go easily down the barrel, and 4in. longer than the barrel; at both ends cut jagged notches to hold tow or flax; wash the barrel with lukewarm water with a little soda in it. When it is so clean that a white rag comes out as clean as it goes in, you may be satisfied the rifle will shoot well. Quicksilver will remove all accumulation of lead. An iron rod is likely to injure the very delicate grooves of rifles, but if you are obliged to use one, a brass tube 6in. long put in the muzzle, and hollow, to let the iron ramrod pass through it, will prevent its injuring the grooves and lands. Neats' foot oil, strained three or four times through flannel, is best for the inside and outside of the barrel; but no oil should be allowed to remain inside.

RUSTING, TO PREVENT.

1. To remove rust from steel, cover with sweet oil, well rubbed on it; in forty-eight hours use unslaked lime powdered very fine. Rub it till the rust disappears. To prevent the rust, mix with fat oil varnish four-fifths of well-rectified spirits of turpentine. The varnish is to be applied by means of a sponge; and articles varnished in this manner will retain their brilliancy, and never contract any spots of rust. It may be applied to copper philosophical instruments, &c.

2. Common beeswax rubbed over the barrels of fowling-pieces, and afterwards polished by means of a coarse flannel, repels rust.

3. Three ounces black lead, ½lb. hogs' lard, ¼oz. camphor, boiled upon a slow fire. The gun-barrels to be rubbed with this, and after thirty-six hours rubbed off with a linen cloth—twice dressing in the winter will be sufficient.

4. Dress the barrels, if at the sea-side, with neats-foot oil that has had lead soaked in it (say half a pint of oil and one pound of dust shot, occasionally well shaken, and left in a bottle for a week), till it is of a dark colour.

5. Wash the guns and locks quite clean with hot water, and, when quite dry and hot, varnish all outside parts with a thin coat of linseed oil. To get rust out of barrels or locks, anoint them well with neats-foot or olive oil, and, after they have soaked for a couple of days, wash off with hot water.

6. Mercurial ointment will prevent the rusting of gun-barrels.

7. Dissolve a given quantity of benzine in half its weight of white wax, and apply the solution to the metal with a brush.

8. Have the gun carefully cleaned. Procure some of the best slow-drying copal varnish; cork up one end of the barrels and fill them with boiling water; apply the varnish at once with a camel-hair brush, taking care to paint all over equally. Leave them till the next day to dry, and then, before the varnish is quite hard, rub it over with a piece of oiled leather, which will smooth down any little irregularities on its surface. For coast-shooting apply a second coat in the same manner, but for ordinary shooting one will be sufficient. The gun should not be used for a day or two afterwards. It is not injured in appearance by this application if properly done; and the hot water used in clearing it will not injure the varnish, which can be removed by friction.

9. Have the barrels well cleaned; then give them a thin coat of the best copal varnish, and when this is nearly dry, but still "sticky," rub over it a little bronze powder with the finger; let it remain on about two days, and then give it another thin coat of the same varnish, and let it dry in a current of air without heat. If the "brassy" colour of the bronze powder is objected to, blacklead will do. Care should be taken that the gun is not cleaned with hot water. This dressing is easily removed with American potash.

10. A combination of mutton suet (boiled down), beeswax, and neats-foot oil, in equal parts, forms an impervious coating to the air. Dissolve the salts deposited by the combustion of gunpowder by washing out the barrels with cold water; then pass through the barrels beiling water, then rub them dry, and, lastly, rub inside and outside the composition whilst the barrels are warm, which in cooling forms an excellent preservative. Before shooting, by friction, remove the varnish.

11. After the barrels have been cleaned, take care to have them well dried; then, with a cleaning rod and some tow, dress the inside well with some clean goose grease, with a sprinkling of finely powdered blacklead in it, taking care not to leave it thick on, but rub it almost entirely off, and

then keep the gun in a dry place. If the outsides of the barrels are inclined to rust, the same may be applied to them with advantage—even salt water will scarcely touch them.

12. Keeping them filled by two pieces of wood, an inch or so longer than the barrels, covered with cloth or baize, made to fit pretty tight, and slightly greased, with (at one end of each) a loop of twine to pull it out by, will prevent rust on a long journey.

13. Twenty ounces finest olive oil, 1⅓oz. spirits of turpentine; this to be rubbed on the gun-barrels with a rag, and also inside, leaving them with the oil on, and not rubbed off until wanted to be used. This, during any damp weather, will keep guns in first-rate condition.

14. Take the commonest and cheapest kerosene oil and clean the inside and out of your gun with it, in the same way as you would use hot water, excepting that you bottle up the soiled oil for a future cleaning. It does not make the locks sticky, as olive oil does, or evaporate like turpentine. It enters into every crevice, eats out all rust, and, so long as it remains on the locks or gun, will prevent rust from accumulating; it is equally good for stirrups, bits, machinery, fire-irons, door-locks, &c. The heavier petroleum and paraffine oils, that are manufactured in immense quantities and sold as lubricating oils, would be preferable, as they are destitute of the odour of the burning oils and have more *body;* they do not become adhesive, and are now largely used for all kinds of machinery. Oils of this kind are sold by some of the gunmakers as Rangoon oil.

15. Some sportsmen advise the use of furniture cream. Rub a portion of cream equally over the barrels, and then polish by rubbing briskly with an old silk handkerchief. It is also excellent for gun-stocks, used in the same manner. When necessary to renew the coating of cream, it is best to clean the barrels first with a piece of tow dipped in turpentine.

16. Put some best Lucca or salad oil in a bottle, with as much (lump) of camphor as the oil will dissolve—of course, put in a stopper. Wipe the barrel dry, and then apply by means of a cheap shaving-brush this preparation on every part of the barrel—a thin coat will be enough. Remove it the next morning by a cloth, when you will see the oil is coloured by rust, and repeat the coating of oil, &c., till the rust is removed. Always apply it after cleaning the gun, and lay the barrels by with a coating of it; also the outside of locks, &c.

17. Carry a dry rag, wipe the barrel dry after every shower; on return home wipe dry again, then rub it over thickly with a mixture of salad oil and mercurial ointment; leave it on for an hour, then wipe it off with a piece of clean flannel.

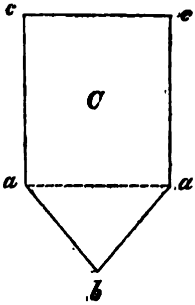
18. Rub down in a mortar 1oz. strong mercurial ointment with 6oz. of tallow and 8oz. neat's-foot oil. Coat all the metal parts inside and out

with this composition, and they will remain free from rust. The interior of the lock should only be oiled with the proper oil.

19. To protect guns from rust during a long sea voyage, mix one part of mild mercurial ointment with three of tallow, and apply the mixture in a melted state to the whole metal surface. The guns must also be packed in a box lined with tin, and soldered down. Or fill the barrel full of melted tallow, and smear the outside thickly also with the same; oil the locks, and also the furniture of the stock, and place the whole in a case lined with tin, and solder down.

SHOOTING IN THE DARK, SIGHTS FOR.

Take a piece of stiff white paper, and cut out the following pattern, about an inch and a half long and three-quarters of an inch broad; lay this upon the gun-barrel at the muzzle-end, with the acute angle *b* exactly in the centre of the rib: then bind with strong packthread fast to the barrel (first withdrawing the ramrod) at the dotted line *a*, and wafer or paste the broad portion, *C*, to the rib. You have thus the angle *b* pointing in an exact line to the centre of your breech-sight, while the whole paper is secured to the rib from *c c* to *a a*. Now, carefully, with a knife-blade inserted beneath, turn up the triangle from *b* to *a a*, and press it back flat with the thumb-nail, so that *a a* forms the base. You then have a triangular acute sight, as fine as can be wished for, lying at any angle you may choose to fix upon by raising or depressing it, as the base forms a hinge; and with such a sight you can shoot by moonlight at any distance at which the shoulder of an animal can be fairly distinguished.



TO PREVENT WET AND DAMP FROM GETTING INTO THE NIPPLES OF GUNS.

If the caps do not fit the nipples tightly, the powder in the nipples is liable to get wet. Have ready-made in your pocket little wooden pegs about the size of the nipple-hole, and, either before or after loading your gun, drive tightly with your knife a peg into each nipple, and cut them off square, put on the case, and fire as usual.

KENNEL, THE.

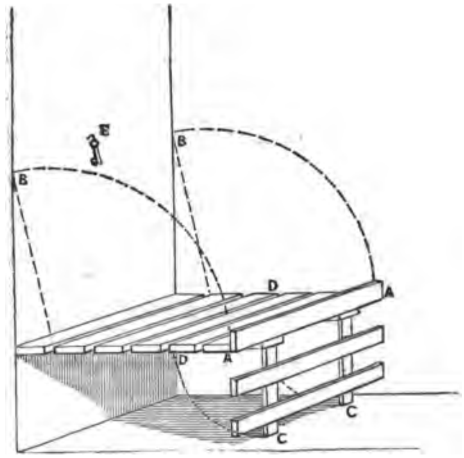
BUILDING OF.

The kennel should be built on high and dry ground, the yard facing the south or south-east. The benches on which the dogs sleep should be so constructed that the beds of them can be easily raised by means of hinges, so that no dirt be allowed to accumulate underneath them, and so contrived that no dog can get below them; there should also be easy access to them by a sloping board, with ribs on it so as to render leaping up and down unnecessary. A plentiful supply of clean litter is essentially requisite for the comfort and health of the kennel, and must on no account be neglected more in winter than in summer. A constant supply of pure fresh water is likewise indispensably necessary, accessible at a certain height from the ground, to prevent its being soiled; this, if not brought by hand, may be conveyed through gutta-percha pipes, these being preferable to lead, in consequence of the risk arising from the possibility of corrosion.

A kennel should consist of a sleeping-room, yard, and boiling-house, with a smaller extra sleeping-room and yard for dogs which may at any time be ill, or for others which may occasionally require isolating from the rest; the sleeping-room should be spacious and lofty, and so constructed that the degrees of heat may be regulated by ventilation, according to the season of the year. Between the sleeping-room and the boiling-house, if an open space be left under cover, it will be advantageous in hot weather. A smaller quantity of litter will be required in the summer than during the sporting season; but the more frequently it is changed the better.

KENNEL BENCHES.

Have benches made of inch deal, cut into widths of 3 inches, and nailed half an inch apart to two transverse pieces, to which hinges are fixed to connect the bench with a board 6in. wide, fastened firm to the wall, about a foot from the ground. In front is a piece of board about three inches in width, to keep the straw from drawing off with the hounds. To prevent the hounds from creeping under, nail two long laths the length of the bench across in front of the legs, which are hung with hinges in front of the bench, so that when the bench is hooked back they



A A folds to B B; C C folds to D D;
E, hook to fasten bench back.

fall down and hang flat. By having the six-inch board between the hinges and the wall, it prevents the former from being strained when the bench is hooked back with straw upon it.

Another description of bench for hounds is one shaped like the letter V. It may be made close like a sheep's rack, quite to the ground, which will prevent hounds getting under it; though the cause of dogs so doing is in consequence of quarrelling among themselves. When this sort of bench is well filled with straw, hounds make a nest for themselves, and are thus warm and comfortable; and there is no chance of their scratching down to the bare board, as in the ordinary bench. Of course, this description of bench is quite movable, and made of any length and breadth, according to the size of kennel and hounds.

A good bedstead for a kennel is a square one on four short posts. It should be open enough in the bars of the bed to let dust, chipped straw, and hair fall through, and be so low and near the ground that any lame or tired hound of any size should get with facility upon it. A bar or two, if necessary, from post to post, should prevent any dog, however small, from getting beneath it. The bedstead should be placed so as not to touch by a foot any wall; for if it is allowed to touch the wall some of its occupants will get a trick of walking along the bedstead while they scrub their sides against the wall, dirtying it, and damaging their coats, while at the same time, when thus amusing themselves with this trick, they often trample on their sleeping fellows and produce a quarrel.

FLOORS OF.

The following is a good composition for kennel floors. Gravel saturated with gas-tar, and mixed until every particle is black, then laid on to the surface three inches thick, raked and rolled. At the end of a week lay in boiled gas-tar with a brush, hot, and fine gravel sprinkled on, and rolled or beat, and watered, if the weather be dry, till pretty firm. In a few weeks it is firm enough to cart on. The smell soon goes off.

VERMIN IN.

Scald, smoke, and whitewash the floors and walls; they live in the joints of the brick, stone, or wood.

Rub down 1dr. of corrosive sublimate with ½oz. of sal ammoniac, and dissolve in two quarts of water. Wash the benches with this, removing the dogs until dry, and then brush a coating of lime over it.

MISCELLANEOUS.

ARTIFICIAL KITE.

A common large toy-kite having been flown, the exact representation in size of a falcon is attached to its string at fifty or sixty yards beneath. This is so strung that it has liberty sufficient to sway to and fro, kept by its strings, in a horizontal position. Its body, neck, and head are flat and of light wood, and its wings and the greater portion of its spread tail of canvas; its colour very dark. From the great distance at which the hawk is beneath the kite, it can with any facility be made to swoop close over the turnips or stubbles in which the birds are supposed to be, and rise, hover, or move on again at pleasure. The person in charge of the apparatus should be considerably in advance of the guns, and the ground should be beat with the wind, and not against it. Great care should be taken by those with the guns not to press too close on the hawk, or to make any noise; the attention of the partridges should be riveted as much as possible on their visible and apprehended foe.

Again: Get a boy to hold the kite made in the shape of a bird. The sportsman must walk with the wind, the boy being a little in the rear; a good length of string must be let out, and the kite allowed to descend towards the ground occasionally. The kite can be guided in all directions. The fences must be well beaten, as the birds run into them.

BIRDLIME.

It can be made either from holly bark or mistletoe berries. If the former, strip the bark in July, boil it in water for seven hours, till tender, pour off the water and place the bark in alternate layers with fern; leave it to ferment for two or three weeks, and it forms a gummy substance which must be pounded in a mortar into a mass. Now rub it in the hands in running water till all the refuse is worked out, then put it into an earthen vessel; leave it for some days to purge itself.

The birdlime of mistletoe is made by boiling the berries until they burst, pound these in a mortar, and wash away the refuse with fresh water.

Again: Boil slowly linseed-oil until a quart is reduced to less than half a pint, when it will be found to be birdlime of the best quality.

BREAD BAKING IN CAMP.

The principal thing required for this is about a square yard of American cloth. Baking powder should be carried either in a strong bottle or in a tin box, as may be most convenient. The first thing to do is to collect a heap of dry sticks, about 18in. high, and 2ft. or 3ft. diameter; set it on fire, and let it burn down while you are getting the bread ready. Then scrape a hole in the ground, say 2in. or 3in. deep, and lay the damper cloth over it and press it down into the hollow. Into this put 1lb. or 2lb. or pints of flour, with about a small teaspoonful of baking powder to each pound, and a pinch of salt. Mix all together dry, then mix with a little water; lift the cloth on to a level place, and knead the dough; make it into a roll, 3in. thick. Flatten down the fire with a stick, so as to have a bed of live coals, 2in. or 3in. thick. Cut off a slice of dough, say 1in. thick; flatten out to about the size of a ship's biscuit, ¼in. thick; throw it on the coals, and so on with the others. As soon as the cake begins to smoke, turn it over. When done they will sound hard and hollow when struck with a stick. If any part sounds dull, give a few minutes more time. When done, set on edge to cool. The damper cloth folded and rolled together is easily carried, and is all the apparatus wanted.

Or knead the dough into a flat oval shape, and bury it in the ashes and dust of a wood fire. When sufficiently baked, the dust is easily removed from the loaf with a dry cloth.

BREECH-LOADING CARTRIDGES.

To load.—For Wild Game: 2¾ Hall's No. 3 powder, a thick 12-bore felt wad, with half a 1¼ charge of No. 6 shot slightly oiled, a 13-bore thin wad, the remaining half of the oiled shot, and another thin wad over all.

To fix bullets in.—If a round bullet be used, the case may be turned over as for shot guns, to the extent of about 1-6th of an inch, and any space that may be left between the turned-over edge and the ball filled with melted beeswax. The ball will never move, and the wax is useful for lubrication. A conical ball should have a cannelure or groove near the base, into which the cartridge case can be compressed or "choked," either by means of a piece of strong wire as a makeshift, or by some regular instrument made for the purpose.

BOOTS, TO SOFTEN THE LEATHER OF.

The boots should be covered with damp cloths till they are supple. They should then be dressed with neat's-foot oil, which will keep them so. In a couple of days they may be dressed with the usual composition for such boots.

FINGER BRUISED.

This very disagreeable accident very frequently happens, and arises from various causes. It may be that the right trigger is set too straight, thus enforcing thrusting forward the shooter's hand to reach it, and consequent pressure of the middle finger against the guard. The setting, bend, and shape of the trigger are all of the greatest consequence. A man should be able to pull either trigger without shifting the hand. Or the injury may be produced by the formation of the guard, which should slope forwards as much and as quickly as possible. A guard cut down straight is bad, and the case is aggravated if it be wide and coarse; it is then pretty certain to establish a raw under heavy charges. It also occurs from a heel-plate being too much sloped, thus causing the butt to slip from the shoulder. Have the guard sloped as much as possible, and the half next the middle finger made round, and about the thickness of a quill.

The principal reason why the finger is cut lies in the want of sufficient grasp of the gun by the shooter. If the recoil is heavy, reduce the charge of powder until you can shoot in some comfort; a buffer may also be made by taking an ordinary dogskin glove, and sewing round it a strip of chamois leather, and stuffing the space between with a little cotton wool, you have got a cushion on the side of the finger which will prevent much further injury, The india-rubber guard is not so comfortable, as it to a certain extent stops the circulation of the finger. The cotton wool can be increased to any thickness and any tightness that the case may require. Most generally it is the explosion from the right barrel which causes the injury. If so, shoot the left-hand barrel first.

FUSES FOR BOLTING GAME OF ALL KINDS.

Sulphur, 18oz.; nitre, 15oz.; pitch, 6oz.; resin, 3oz.; mealed gunpowder 3oz.; powdered coal, 6oz.: mix sulphur, nitre, pitch, and resin, and melt gently over the fire; take off, mix with the coal, and when "stiffish" add gunpowder; knead mixture, and make into balls. The quantity above given makes about four balls for bears. Get a tin tube, and cut it into sections, which makes the stuff handy to carry; but small balls about the size of a pea would do for rabbits. Some add a little cayenne pepper which is an admirable addition.

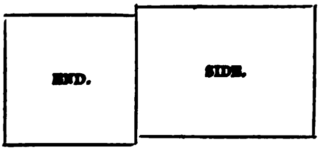
GAME, AGE OF.

An easy methed of ascertaining the age of pheasants, partridges, grouse, and black game, in the early part of the season is to hold the lower part of the bird's beak firmly at its extremity, between the forefinger and the thumb; if the bird be an old one the beak will sustain his entire weight without in the slightest degree yielding, but if, on the contrary, the bird be a young one, the beak will yield, and perhaps break. The legs of young partridges are yellow, those of old birds darkish. A one-year old cock pheasant has a short spur without any point, in fact round; in a two year old bird it is still short but pointed; and in a three and four-year old cock it becomes both long and very sharp, and the plumage becomes much darker. The plumage also of the hen bird becomes much darker with age. The ears of hares and rabbits which are young may be easily slit, whereas those of old ones can only be torn by using the greatest force.

GAME BOXES.

Have one end of the game boxes made a little thicker than the other; have a centre-bit hole bored in the middle of it about a quarter of an inch deep, and a shade larger than the seal to be used. See that the game is really put in and well nailed down. Tie round it as flat as possible a coarse strong tape, bringing the ends across each other in the hole, tack and seal over them. This prevents the seal being broken accidentally, and it likewise prevents the tape being used as a handle to lift by, or being broken by other boxes being drawn over it. Weigh the boxes if possible, and advise the consignee of the weight, or mark it on the boxes. Do not send them too long before the train goes, and have a receipt for them.

Again: Have a deal box with hinges, and two holes bored in the lid about an inch from the edge, with holes corresponding to the front of the box. Strings are passed through these and tied, and the knots sealed. Or get a slip of 9-inch-wide deal, three-eighths of an inch thick—six of these are got from the plank. From this cut two lengths of one foot each for the sides of the box, and two of nine inches for ends. Let the latter be reduced laterally three-quarters of an inch, so that when nailed into their places the box shall be nine inches wide over all; but, instead of nailing ends and sides on a level, as is usually done, let the sides be so placed that they shall be three-eighths of an inch—*i.e.*, the thickness of the timber—above the tops of the ends, the bottom of the latter being similarly circumstanced as to the sides, as per diagram.



This arrangement very plainly admits of the bottom (a piece of the same slip) being nailed down on the sides, the ends being secured by brads driven through them into the ends of the bottom. The top must be cut sufficiently long to cover the ends, and be reduced three-quarters of an inch in width, so as to let it fall into its place, where it is fastened by brads driven in exactly opposite directions from those which secure the bottom. A box so constructed can hardly be opened without being torn to pieces. The cost of the material would be, in ordinary localities, about 6d.; the time occupied in the manufacture twenty minutes to half an hour. The space indicated, 8in. by 12in., will hold four grouse. A slip of the same deal may be, if thought desirable, dropped on the first four packed, so as to equalise the pressure. An amateur making his own boxes would have his operations much facilitated by having a movable framework, which is easily made of planed wood, to set up inside the boxes while in process of manufacture. Use brads—*i.e.*, headless nails—and bore for them, so as not to split the timber.

Col. Whyte advises to make game-boxes of tin, open at one end with a top to fit over; when filled, solder them down all round, or make the tops with two ears, and solder them down only. The tin cases are nearly, if not quite, as cheap as wooden ones, and you can solder in less time than you can nail.

Another plan is to have the bottoms and tops of the boxes made alike—that is, the pieces of wood of which each is constructed are cut to the full length of the box from end to end, then a piece of thin iron hoop is nailed across the bottom, and brought round over the top, so as entirely to encircle the box. The ends of the hoop are allowed to overlap on the top, and are screwed down, when the address card is well nailed over the ends of the hooping.

Or take three different sizes of planks of the following dimensions—Some of one-fourth of an inch in thickness, and thirteen inches broad, for tops or covers; some of three-eighths of an inch thick and thirteen broad, for bottoms; the others of half an inch thick and six broad, for sides. If boxes are required exclusively for grouse, 4in. will be sufficiently wide for the side planks. With materials thus secured, a good carpenter can make from twelve to fifteen boxes per day, and the entire cost will not far exceed 6d. per box. One-quarter of an inch in thickness is sufficient for the top of any game box, and is of trifling weight. Boxes of 15in. in length, 10in. in breadth, and 4in. in depth, will carry three brace of grouse, or four brace of partridges, or five couple of cocks. A larger quantity might easily be squeezed in, but if you wish your birds to reach their destination in good condition, they must not be pressed together. It is always advisable to nail two addresses on each box, one on the side and one on the top, as the latter is occasionally torn off or damaged.

GAME CARRIER.

Birds put into a bag or basket in warm weather one upon another would not keep twenty-four hours. One method of obviating this is to have sticks made expressly, or open baskets, on and in which birds can be suspended separately either by the heads or legs. With the ordinary game-stick birds can be carried in this manner; but if a strong wire, something less than the size of the little finger, be introduced exactly in the centre of the stick from one end to the other, birds can bo more easily and better carried, if the open space between the wire and the wood on both sides be sufficiently large to admit of the bird's legs; the stick to be supported by a broad leather strap firmly attached at each end of it. When birds are perfectly cold they can be taken off the sticks and packed in baskets with some heather, and sent home, and should then be hung up immediately in the game larder made specially for their reception, with a good current of air through it, and all the apertures through which the air passes covered with the finest wire grating, so as to intercept the passage of flies.

Mr. Sinclair's Plan.—A square piece of wicker-work, 20 inches long by 16 deep, like a small fire-screen, is pinned by two straps like those by which a knapsack is carried; a buckle in front fits each to the shoulder, according to the fancy of the wearer. On this flat piece of wicker is sewed a net about 6 inches wider than itself, so as to form a bag large enough to hold six brace of grouse and a couple of hares. To keep the bag from gaping, the mouth of the net is strung to a piece of vulcanised india-rubber tube, through which a stout cord is run, just long enough to admit of the entrance of the game. Along the rod which forms the upper rim of the basket-work are fastened a dozen hooks of stout brass wire, just wide enough to admit the head of a grouse. When a bird is shot, he is suspended by one of these hooks. His body, being inside the net-bag, cannot be lost in case his neck gives way; and the birds, being neither crushed nor heated, are of course in very superior condition; and when cool can, if room is required, be dropped into the bottom of the net. In order to strengthen the upper part of the basket-work, have it bound for an inch and half with leather. In wet weather a flap of oiled calico can be fitted over all. The entire concern weighs less than an ordinary game-bag, and can be made by any ordinary basket-maker. The upper hole in the basket-work through which the strap passes should be at 5 or 6 inches from the top, and the basket-work itself slightly bent so as to throw the weight well over the shoulder, as, if hung too low, it presses inconveniently on the back and loins.

GAME, PACKING OF.

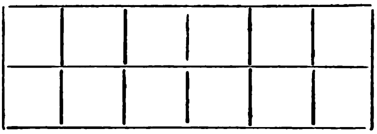
Hops are sometimes used in packing, and are excellent as a preservative; but charcoal powdered, and mixed with a little pepper, will answer the purpose equally as well, and is a cheaper material. This should be introduced under the wings and into the mouths of the birds; and if quite cold at the time of packing, they will remain good for several days.

Some use branches of fir broken up small; a layer placed at the bottom of the box, and then a layer of game, and so on, the top layer of course being fir.

Others wrap each bird in coarse strong brown paper, it is clean and simple, and readily had from any grocer's shop; a large sheet will cut into eight pieces.

The plan usually pursued in the North of England is as follows: Clean the game—that is, wipe off the blood—cover the wounded part with absorbent paper, wrap up the heads, and then sprinkle coffee over or amongst the feathers or fur, as the case may be; pack up carefully, and the game will be preserved fresh and sweet in the most unfavourable weather. A teaspoonful of coffee is enough for a brace of birds, and in this proportion for more or larger game.

A plan often pursued is to have a box made with partitions, so that each bird may be in a compartment, by itself thus—



SIX-BRACE BOX.

Select the cleanest-killed birds, which have not been either in a bag or basket, but carried on the stick. Put a pinch of pepper in the mouth, in the vent, and on any shot-marks; put a piece of paper, *flat*, under each wing; wrap the head in a bit of paper, like a screw of tobacco; and put the whole bird into a paper-bag, and lay it in its compartment; fill up the box with charcoal chopped about the size of beans. If charcoal is not handy, paper is the best packing—better than heather, hay, or sawdust, which are all damp. Old birds carry better than young; birds that have been wet even from a slight shower won't carry. Hares and rabbits should be grulloched, and sent in a hamper.

Again: As soon as convenient a good sprinkling of black pepper should be applied to the beak, vent, and any bloody places or shot holes. As soon as properly cool, a small piece of charcoal should be put into the throat and vent; a small handful of good fresh hops should be put round each bird (or this would be sufficient for two), and each bird be wrapped separately in paper as tightly as possible, care being taken to place the hops under the wings and between the legs, and in any place which is moist, either from blood or other causes. The birds should then be put into deal boxes, not too deep, and as close together as possible.

Or wipe the blood from the beak and wounds, and hang up the birds in a dry place where there is a draught to get rid of any moisture from the feathers. When ready to pack, put a stick of charcoal under each wing (several if there is a wound in the side), a piece between each leg, and another tied to the neck; then cut some unbroken straw to the length of the bird, place it round, and tie it at each end; pack in a close box, sprinkling charcoal. Birds packed in this way have carried well to America.

GUNPOWDER.

Drying of.—Unscrew the head of the flask and immerse it up to the neck in boiling water, and keep it there for a quarter of an hour. Occasionally take it out, shake it and replace it. This will dry the powder as well as a fire, without danger of igniting it.

Stains on the hands.—Use soap and pumice-stone.

GUN STOCKS, POLISH FOR.

Linseed or rape oil (purest to be had) one gallon, alkanet root (shredded) 1oz.; boil slowly until thick, let cool for two days, so as to let any sediment deposit, then decant into small bottles, cork well, and keep for use. Plenty of elbow grease is required.

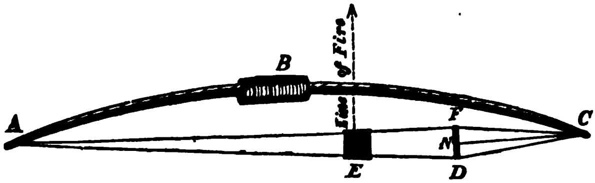
HOWLING DOG.

The only sure remedy for howling at night other than death is the use of the whip. One good flogging, following upon repeated cautions with the voice, will generally suffice to control any dog if the effect is afterwards kept up by perseveringly watching for a repetition of the act, and rating at once. But whether the whip or the voice is employed as the punishment, there should be no chance of the dog being ignorant of the nature of his offence.

Companionship whether of dogs or horses will often prevent howling. It is also sometimes caused by hunger and thirst.

INDIAN PELLET BOW, TO MAKE.

A, B, C is a good strong bow; an old arrow bow would be a very good one, but it must be stout. At B tie a piece of wood for a handle to hold the bow with. Get a long piece of stout catgut, and string it on the bow.



It must be doubled all the way round the bow, about four or five or six inches, according to the size of the bow. Put a little piece of wood, about three inches in length, and pass the catgut though the niches on each side of F, D, and tie this piece of wood at N to the end of the bow to prevent its slipping. Lower down at E you sew a very thick piece of cloth, about one and a half inches long, and of the same breadth, on the catgut; you then take a clay marble, and, clasping the bow with the left hand at B, with the forefinger and thumb take up the marble and place it against the cloth

E. Pull it in the same way as a bow and arrow, and in firing off always take great care to have the piece of cloth E a little above the handle B, or you will strike the left hand with the marble. Cats may be killed with this weapon at fifty yards. Great accuracy may easily be obtained.

LARGE BIRDS, REMOVAL OF, FROM ONE PLACE TO ANOTHER.

Have a large strong bag net, with an iron rim round its mouth, fixed firmly to a pole. The mouth of the net is carefully but quickly clapped over the bird, who will, if a raptorial bird, clutch at the meshes of the net; turn it round, bring the side of the iron rim under him, and coop him up as it were. Give a turn to the net; you will find him safe and sound well down in the bag of the net, and he can thus without hurting a feather be carried to any new house (if not out of the grounds), or to any cage in which he is to be sent away. In all cases allow the birds to come out of the net themselves, by resting it on the bottom of their cage and freeing its mouth. In handling you are sure to hurt them, and pull out a quantity of feathers. Small birds may be taken out of the net by the hand, but never large ones. The net should be rather deep, and wider at the bottom, to hold the bird comfortably, lying on his side or back quite safe.

OIL FOR GUN CLEANING, TO PURIFY.

Procure some neat's foot oil from the tripe-seller's, and then place it in broad bottles before the fire, first putting in a charge or two of shot; every second day the oil should be put into fresh bottles, leaving the shot and the residuum behind. Continue to give the oil the same treatment until no residuum is left. This oil will never cause rust.

SHOOTING PONY, TO TRAIN.

Teach him to bear the noise of the gun by firing caps first, and afterwards small charges near him, ending with firing them from his back. He will soon stand fire; and beyond this all that is necessary is to teach him to jump in hand and to stand wherever he is left, which perseverance only will accomplish.

PUNTS.

There are various descriptions of boats in use for wild fowl shooting—double-handed (boats to carry two persons), single-handed, and launching punts. The former is used by amateur gunners, the two latter by professionals; the latter description of boat is used for "pushing over" the mud at low water at night and approaching the birds whilst at feed on the dry mud; and the two former for shooting afloat, both by day and night. A double-handed boat should be from twenty-one to twenty-two feet long, and 4ft. 6in. beam; the sides should "flam" (say about four inches), and her deck be rounded (so as no water should lie on it); her bottom should be made of the best grain oak or American elm, and the whole of the fastenings, nails, &c., should be of copper; rowlocks all copper, covered with leather. She should carry two pair of nice light oars, made of deal or larch, two "set-poles" (for propelling the boat to birds, when there is no water to scull to them), and a mast and sail; she will then be complete.

A well known wild fowler recommends a boat 19ft. 6in. long, 3ft. 7in. beam, 16in. deep amidships, and 22in. deep at bow and stern; he also suggests a fore-and-aft lugsail, which is only to be used with a free wind. Fit her with a second lug or mizen, with a mast stepped about 4ft. from the stern, this boat in ordinary weather would make very fair way to windward, owing to her length, notwithstanding the flatness of her floor. This boat with a centre plate of iron the same length as her beam, 3ft. 7in., and 16in. deep, would have very much increased power to windward—so much so, indeed, that in any weather fit to go afloat for shooting she would beat against a considerable tide. The weight of the iron plate would be about 120lb., and when lowered would add so much to her stability and power as to enable the boat under sail to force against a considerable wash; and if decked fore and aft, with a 5in. waterway, having a 4in. coaming, she would rarely ship any water. Should 120lb. be thought too heavy for the keel, it might be made half the weight of wood, with 15lb. or 20lb. of iron or lead on its lower edge to neutralise its buoyancy; the heavier weight, however, would give the boat great power in a fresh wind. A shallow boat, although when decked it answers better for shooting, does not suit nearly as well for fishing, as you cannot get at the ends of her to do anything which may be required. If this boat, however, is 22in. deep at bow and stern, and built very flat, so as to be as buoyant as possible, she will not ordinarily ship any water. Should either a fore or aft deck, or both, be desired, they would be better movable, and if of light zinc would be so portable that they could be put on and off without difficulty. In order to get up to wildfowl well, a boat should be so shallow that she should look a mere point when end on to a flock of birds—a condition utterly incompatible with the seaworthiness desirable in a boat on an open coast, where, from the exposure, the sea gets up so very quickly.

To make a light boat or punt, say 12ft. long, and 3ft. 10in. beam, take a sound piece of ash, 12ft. long, 2in. thick, and 2in. deep; slope off the lower corners at each end, that the stem and stern posts may be joined on at a curve or angle, and so slide over weeds, &c.

For ribs take pieces of ash 1in. thick, 1½in. broad, and 3ft. 4in. long, for the two middle ones. Let these be shaped away towards the ends on the under-side, till they are ¾in. thick.

Find the middle of the keel; cut a piece out, at right angles to the direction of the keel, from the upper side, of the exact depth and breadth as the thickness and width of the rib; at three or four inches from it, towards the stem, cut out another; and in them lay the two middle ribs. Screw them firmly to the keel and, if necessary, stay them by chocks on each side of the keel, fasten both to the ribs and keel.

Take a lath or wand that will curve as desired, and fasten one end to the fore part of the keel; carry it to the ends of the two ribs, so that it may touch both; and then carry it to the after part of the keel. This will be a riband to guide one in the cutting the lengths of the other ribs, which may be laid in at intervals of ten inches or one foot. Only, at 3ft. each way from the centre ribs, double notches three or four inches apart must be cut for double ribs—for on these the thwarts will eventually be laid.

The double ribs may be left 1½in. wide at their extremities; but the single ones be narrowed to ¾in. Towards each end of the keel the ribs become short, and, instead of being flat, had better form an angle with the keel, increasing as they approach each extremity. Instead of very short ribs, say less than one foot, stout chocks had better be fastened to the keel, at the proper angle for the bends to be laid against them. Securely fix in all the ribs, taking care that each side of them, from the centre to each extremity, is exactly equal in length; for if not, the boat will be lop-sided.

Cut out stem and stern pieces at the proper curve outside, and on the inner side so as exactly to fit firmly to each extremity of the keel. Both stem and stern piece may be the same shape, and the boat be sharp forward and aft, like a whale boat. But if a square stern is wished for, cut out a stern-board of elm; but in either case the stern should be sharp for one-third up from the keel, and the stern-post curved, to avoid hanging in the ground in shallow water, when backing astern, &c.

On the length of the stem and stern posts depends the height of the boat above the water. Assuming that a medium height is chosen, say eighteen or twenty inches from top rail to under edge of keel, mark off that height on the stem and stern. At all events, whatever height be chosen, both stem and stern posts must be very strongly joined to the keel, and firmly fixed by a bond-piece or bracket screwed to them and to the keel. The outward edges of each should not exceed ⅜in. in thickness, so as to cut the water without noise.

For bends, take ash pieces ⅜in. thick, and the same width as the two middle ribs. Lay three inches or so on the under side of those ribs, and bend them from nearly horizontal to perpendicular in a curve of 3in. spread. Fix them in this curve either by brackets on the inside, or letting them set, if steamed. Of course steaming, if it can be effected, will greatly assist in curving the bends, especially those towards the extremities.

When the middle or midship bends are set up, all having exactly the same spread and curve, take again the lath or wand as a riband, and, fastening one end to the stem, an inch below the mark on the stem, bring it aft to the midship bends, and thence to the stern-post—or, if square stern, to stern-board. When the desired curve for top rail or gunwale is obtained, set up all the other bends according to it, of the same breadth as the width of their respective ribs, taking care that the curve and spread of each harmonises with the other, and each longitudinal half of boat is exactly the same size.

When all the bends are set up, lay on the top rail, ¾in. thick. If spaces are cut out into which the bends may fit, ¼in. deep, it will be better; and again, on inner side lay on a ½in. rail, in which spaces are cut for the other ¼in. Fasten both firmly together, and you will have a strong top rail, 1¼in. thick. Saw off all the ends of the bends even with the top rail. If a square stern is chosen, cut a piece out of it for the top rail to fit into, and securely bracket the top rail to the stern-board, and at stern join the two sides of gunwale or top rail together for some inches, so as to make the gunwale as stiff and firm as possible.

Immediately under the gunwale lay the first ash lath, say a quarter of an inch thick, one inch and a quarter broad, running from stem to stern. Along the curve of the bends in same way lay another; and, graduating in their course from the first to the last, lay on the others about four inches apart. Between the bends and the keel lay on those for the stern, but these may be thicker than the others, say three-eighths of an inch.

If the curve of the bends is fixed by brackets, lay on a ¼in. plank fore and aft, to prevent the foot catching in them, or partial pressure. If no brackets, lay a stout lath *in* the curve fore and aft.

On the double ribs lay the thwarts six or eight inches below the gunwale; securely bracket them to the bends, both underneath and above. Lay in floor boards, and if straining by partial pressure is feared, fasten a ¼in. band on the keel over the ribs, and 9in. from it and each other; on each side two others of the same thickness, on which the floor boards may rest. If ¼in. is not thought enough, three-eighths or half an inch may be used. Floor boards should be of ½in. deal, and should fit the floor nicely; they should not slip, but may be fastened by staples fixed in the pieces laid on the ribs, and coming through the floor boards at holes made for them, have pegs run through the staples, so that they can be removed when desired.

For rowlocks, for a shooting-boat one thowle through the gunwale, and catching in a staple fastened in the bond about two inches below the under side of top-rail. And then on the outside of gunwale at the thowle a cord or thong to be fastened, which comes over the oar loosely enough to allow a little play, and then catches to a cleat or hook on the inside. The oar can then be dropped in an instant without danger of either going adrift or catching a crab, when it is always ready at hand to be resumed.

When the frame is so far finished, turn the boat bottom up and plane or shave off all sharp edges from keel, &c., &c., to avoid chafing or cutting the canvas.

Take a breadth of canvas long enough to reach from stem to stern, and have a little to spare at each end. Sew down double an inch or so at the edge, to come on the lath just under the top rail; fit it against the sides from stem to stern, tacking it on lightly. Then take another breadth and lay it on the keel so that the centre of canvas comes on the centre of the keel, when it will be readily seen how much it will take to join them, and how all must be shaped to fit well. The seams should overlay an inch, and be double sewn; for, although gutta-percha will join them strongly enough, it is as well to avoid a strain on any one particular stitch.

When the canvas is neatly fitted on prepare the gutta-percha, by heating it well till it boils, keeping it well stirred. Then lay it on with a stiff brush.

Or the punt may be built thus: The bottom consists of three fir planks, 1in. in thickness, 10in. in width, and 15ft. long; the edges must be carefully and evenly planed, having strips of tarred brown paper placed between the joins; strips of inch fir 2in. wide, with edges bevelled off, and nailed across the planks, to form battens to secure them. When laid on a level floor and well pressed together, the cross pieces should be placed about 2ft. apart, having a thick coat of light lead-coloured paint laid upon their under surfaces. Galvanised iron nails should be used, and clenched on the under surface of the punt. Having placed and well fixed the bottom boards together, the next thing to be done is to cut them to the shape required. For appearance sake, both ends should be finely pointed; but to make a stiffer and more commodious boat the stern should be made square, about 18in. in width, and the head gradually cut to a point, commencing nearly at amidships. The head should be of oak or witch elm, and shaped like a long sharp wedge. This must be firmly fixed on to the head of the bottom boards, having a ridge cut on each side to let in the side planks so that they will run flush with the stem-piece, allowing it to be clear of the planks full 6in. or 8in. forward. Next, the stern, either made to correspond with the head, or to be for a square stern, viz., 18in. wide, ½in. thick, and the depth of the planks which are intended to form the sides. When the stern is firmly fixed on to the bottom boards, together with the stem-piece, the side planks must be prepared from two planks of fir, without a knot in them if possible. They should be 17ft. long, 1ft. wide, and before planed ½in. thick. The fixing of these planks is the most difficult and particular part of the whole affair. The lower edges of the bottom boards should be slightly planed away, to allow of a little flare upon the upper part of the sides, making the upper part of the punt wider than the lower part. The side planks must be nailed to the bottom beards with 1¼in. galvanised boat nails, which are far better than copper, because they will not draw out of the wood. Supposing now that the sides are completely nailed all round from stem to stern, it will be necessary to have six knees placed on either side, in order to strengthen the punt. These can be made of oak cut from a crook, to attain the natural bend of the wood, or made of very slight iron, which must be galvanised; the knees should be nailed with the same sized nails to the sides and bottom. Here then is an open punt complete, which should be now well painted inside. We then come to the floor boards; these should be of ½in. fir, about 7ft. long, and tacked on to the battens amidships, having fixed bearers across to the upper edges of the side planks, somewhat arched. Then proceed to cover the whole in with ½in. fir, planed and nailed with smaller galvanised iron nails—an inch in size will suffice. Having done this, plane off the rough edges level with the side planks; then proceed to cut an oval opening in the middle 6ft. 6in. long, and leaving 8in. of deck on either side at the central part of the oval opening. Then have the coamings made of witch elm, steamed and nailed round the opening inside, to be about 4in. wide, in order to prevent broken water from coming into the punt. A couple of small galvanised iron ring-bolts should be placed, the one near the stern, and the other near the head of the punt, having the bolts to go through the deck, boarers, and bottom-boards, and to be clenched on collars beneath. These are most useful appendages when the punt has to be hauled upon the deck of a boat, or to be slung up to a beam in a shed. A hole of about an inch in diameter should be bored through the stem-piece, for the breeching rope to be rove through, and also to tow the punt by; a couple of holes should also be cut through the coamings forward, for the breeching rope to run through.

The punt is now supposed to be built; and the other necessary appendages are the rowlocks, which might be made to branch out over the punt's sides, forming outriggers, to ship and unship when required, giving greater power when pulling with sculls than they would if they were only placed as far as the punt's width would allow. The stool should be strong, somewhat resembling three sides of a box; it should be 8in. high, 8in. broad, 18in. long, and made of firwood also.

The swivel for the gun should be made of an iron or brass rowlock covered with leather, and placed in a block of wood with a hole bored through for the swivel to ride in.

The breeching rope should be of the stoutest hemp warp, not less than two inches and a half in circumference for a half-pounder gun, to be bent on by means of a reef knot, this being better than a splice. This rope is intended to lodge in a deep notch in the butt end of the gun; it takes the recoil with a slight spring.

A rudder can be used if required; a sail also is useful, and a punt will carry a tolerably large one. A lug sail, tacked to the mast, is the best kind to be used, with a mast 8ft. long.

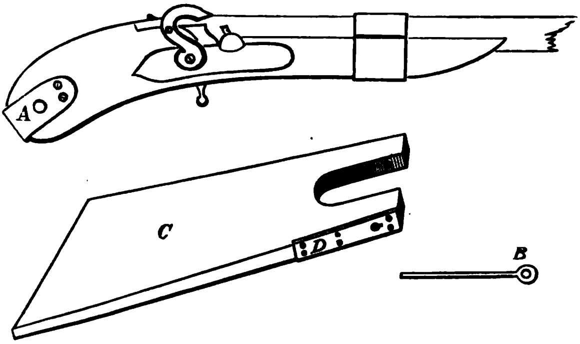
A zinc ammunition box to hold about thirty cartridges should be made to fit under the stern; also two small lockers are useful, one on either side, about amidships under the coamings, for holding a few cartridges ready for loading quickly, and other small useful articles.

A pair of sculls, a pair of short hand paddles, and a boat hook, which would answer as a setting pole, are indispensable.

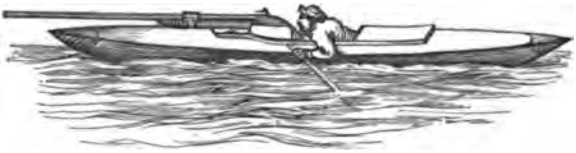
All these things ought to be covered in by means of a lid made of thin planking, like the decks, with a rim round of white elm, corresponding with the coamings, to ship over them. A couple of brass padlocks complete the punt.

PUNT GUN.

The gun stock, which is perfectly square or flat from the trigger to the copper band which secures the barrel to it, is cut off about a foot in rear of the breech, and has a stout plate of copper (A) carried round the end and secured by screws. It is perforated laterally by a hole, for the reception of the "Jack Pin" (B). The next and very simple piece of apparatus consists of the "Bootjack" (C), a piece of sound elm beard, 16in. in length, 12in. wide at its lower, and 7in. at its upper end; 1in. thick at the lower end, but 2in. at its upper, which is cut out for the reception of the heel of gun stock (A), and which is firmly secured by the pin (B) passing through the holes in the jaws of the bootjack, which are strengthened with stout copper plates (D). This comprises the whole mounting of the gun, breechings, springs, and swivels being all discarded. To fire a gun thus



mounted, it has merely to be laid on the "gunning" bench (a block of wood 16in. by 8in.), and run out to the required distance. The gunner then lies flat on his body, his chest resting on the bootjack, which he can depress at pleasure, thus giving the gun any elevation that may be desired. The object being covered, the gun is discharged, and gun and man "come home" together *a few inches only*, without any unpleasant jar or concussion. A good stout elm plank on the floor of the punt is necessary for the heel of the bootjack to slide upon. A gun weighing under 7st. carries 17oz. of shot and an equal measure of powder pleasantly, on this principle, and without the slightest risk to boat or sportsman.



TENTS, TO WATERPROOF.

A solution of sugar of lead and alum would answer. The proportion used is 1lb. of sugar of lead, 1lb. of alum; two quarts of water, boiling, to be poured on the lead and alum pounded. A weaker solution might answer. This will make any cloth waterproof.

NETS.

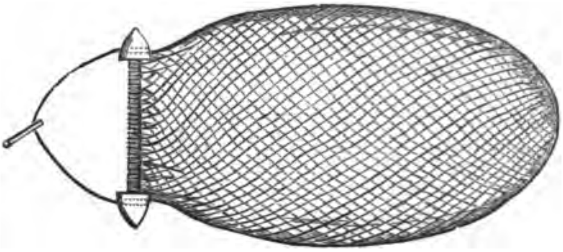
RABBIT NETS.

The length of a rabbit net would be guided by the field or fields where it is to be set up. Those in general service are from fifty yards to seventy yards long, and commonly called "hay nets," made upon a flat spool four and a half inches round, giving a mesh of nine inches; this is a good-sized mesh to admit the rabbit's head, and to hold him in the trammels. The Hon. and Rev. Charles Bathurst, in his "Notes on Nets," says, "The hay net is a plain length of dead netting, but it requires care in setting up, for if hung and stretched too tight the animal rebounds from it and escapes; if too loosely extended, he can get free from the meshes and run off; but, by a proper disposition, the net bags and entangles the animal, neither allowing him to rebound nor shake off his trammels." Three feet six inches is the best height; if the legs are about eighteen or twenty inches out of the ground there will be plenty of "slack" to take the rabbits.

The rabbits are killed in the net by wrenching their heads backwards, which breaks their necks. The top line of the net is then seized, and a slight shake frees the rabbit from the net; it is no easy task to take a rabbit alive out of the net. A dark stormy night suits this sort of work the best. To counteract this system of poaching, the best thing is to scatter pieces of thorn freely over the ground likely to be netted; the brushings of a hedge answer well.

BOLT NETS.

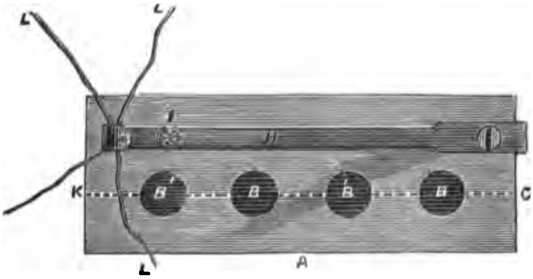
A small piece of wood two and a quarter inches long, is turned as shown in the woodcut, and two holes drilled through it near the ends. The net, which is tied on the central parts, is made on an inch and a half spool, twenty-four to thirty stitches being netted as foundation, and it is made square, *i.e.*, with the same number of rows as stitches. This done, tie in one end of the netting to the wooden runner, and tie the other with the cord, as shown in the cut; then run the cords through meshes on each side of the net and through the holes of the runner; the two cords are then tied together. In using the net it is spread over the hole, and the two ends of the cord pegged down close to the hole; on the rabbit "bolting," the runner slips down and confines the animal in a bag. The runners can, of course, be made any convenient shape.

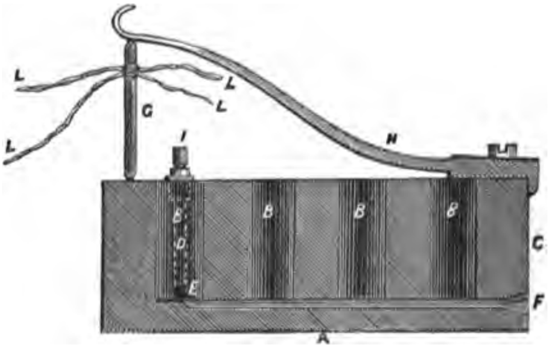


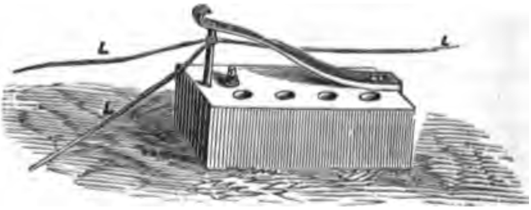
PRESERVING.

ALARM GUN.

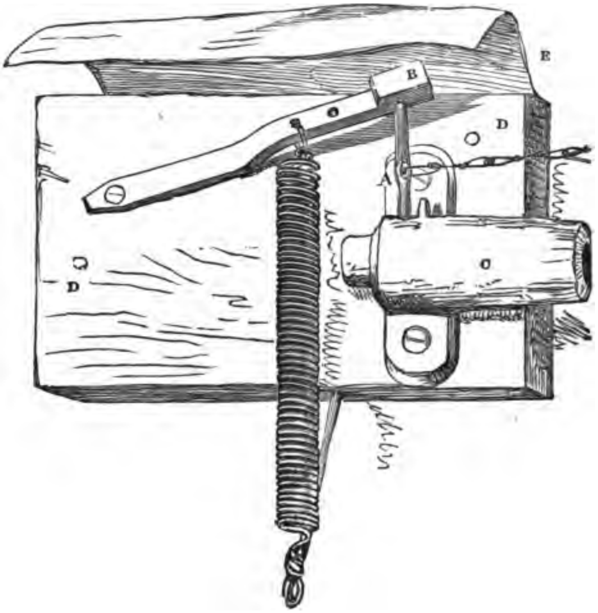
The sketch and description will enable anyone to get it made, at little cost, by any handy blacksmith. Description: AA is a piece of malleable or cast-iron 2½in. square and 6in. long; BB, holes 2in. deep and ¾in. in diameter; D, a small hole ⅛in. diameter, bored parallel to and near the first hole B′; E, a passage ⅛in. in diameter, connecting D with B′; I, a gun-nipple screwed into D; F, a hole 1-16in. in diameter, bored from the end C, running flush with the bottoms of the chambers B, ending in the chamber B′—the mouth of this passage is conical. H, a strong steel spring fixed by a screw to the end C of the machine A; G, a piece of iron wire ¼in. in diameter and 2¼in. long. To load and set the alarm, have as many turned wood plugs as there are chambers B; force one into each chamber, fitting tightly, and touching the bottom; then take some mealed gunpowder, ram it into the passage F till it reaches the chamber B′. When this passage is nearly full, stop the conical end with a wooden plug, to make all tight. This done, remove the plugs from the chambers B, put in a good charge of gunpowder; for wadding use wood. Next, unscrew the nipple I, pour a little powder into the passage D, put in the nipple, set the alarm in the place to be guarded, fixing it to the ground with stones or





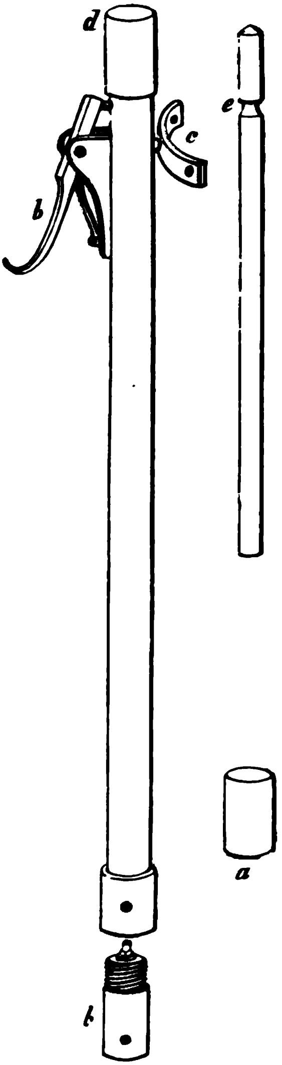


pins driven into the earth. Lift the spring H high enough to allow the bit of wire G to be slipped between the end of the spring and the piece A. To the upper end of this wire must be attached any required number of strings or wires, LL. These wires may be laid in any direction, and to any distance, and made fast. This done, put a cap on the nipple, and so leave it, taking care to steer clear of the extended wires or strings LL; for, should you touch them rudely, the wire G will be pulled out, and the spring H being set free will explode the cap, and bang goes barrel No. 1, setting fire to the mealed powder train, which after a time will fire barrel No. 2, and so on. The wires or strings LL may be laid high enough to clear hares, foxes, &c.



Another plan is to get a piece of iron gas tubing 2ft. 6in. long, with a thread on one end. Take another piece 3in. long, also threaded. Drill a bit of iron ¼in thick, and tap a thread in it for a musket nipple. Turn this bit of iron down till it drives tightly into the screw end of the short tube, and then braze it in. The gun is now complete. Screw the loose socket belonging to the gas tube fast to the long piece, but let the screw of the short one go easy with oil, so as to take off and on. You then get a piece of ½in. round iron about sixteen inches long, and drill a small hole through it in the middle. To set the gun you must tie it up in a tree, with the short barrel downwards. Put a couple of charges of powder in the short one, and screw it to the long one. Insert the piece of iron in the top, and put a nail through it with a wire fastened to any place in the wood. When the nail is pulled out the iron drops down on the cap, and fires the gun.

Again: (A) Prop to the hammer, with the wire attached, which is supported in the usual way across the covert. (B) The hammer, with its spring (F). (C) The small iron cannon. (D, D) Nails by which the frame is fastened to the side of a tree. (E) A tin cover which keeps off the wet. A little collodion painted on the cap after it is applied renders it quite waterproof.



CAPTAIN DARWIN'S ALARM GUN.

We have great pleasure in drawing attention to an invention by Captain Darwin ("High Elms"), which promises to be of great use to game preservers. We know no alarm gun so little likely to get out of order as this, for it has no mainspring, and the whole interior is completely protected from the wet by the cap (*a*). It consists of a piece of gas tubing (*d*), easily attached to a tree by the clip (*c*), and having at its bottom screwed to it the small mortar (*b*), provided with a nipple, which, when in its place, lies at the bottom of the tube. When charged and capped this is screwed home, the rod (*e*) being previously placed in the tube, and its notch supported by the trigger (*b*); in which position it is tied, and the string is not cut till the mortar is screwed home, and the wires tied to the trigger are properly arranged. The advantages are manifest, as the fall of the rod will of necessity explode the cap the moment the wire is touched, without fear of any part getting out of order. The following are Captain Darwin's directions for setting this alarm gun:—

1. Insert the iron rammer into the trigger end of the gun, and allow the stud of the trigger to fall into the neck of the rammer. Tie a piece of twine round the short end of trigger and barrel to prevent its rising while fixing the gun.

2. Screw the gun to the stem of a tree by two screws through the holes in arm (*c*). The gun must be perpendicular, barrel (*b*) downwards. Tie a string round the gun and tree close above barrel (*b*), to keep the whole steady.

3. Unscrew barrel (*b*), and load with a common charge of powder and paper wadding. Put on a cap, and press it well on. Cover cap with a bit of bees-wax and suet mixed, and plaster it well round, leaving just top of cap clear. Screw barrel into its place again, and put on tin cap (*a*) over rammer at (*d*).

4. Drive a staple into a tree a yard from ground, and continue a thin wire, in any direction wished, from the hook of the trigger.

5. Cut the string that held down trigger, and descend carefully. String is to prevent possibility of accident when setting.

The gun may be obtained on application to Captain Darwin, Buxton, Derbyshire.

FOXES, TO KEEP FROM GAME.

1. Break open old powder tins and hammer them out, and cut an imitation of large long teeth, and brush the remaining part of the tin over with gas tar; then get a stick about nine inches long, pointed at one end, cutting or splitting the other to place the tin in, and place two or three of them near to where the young pheasants or partridges are.

2. Whilst the birds are in coops, simply throw down around them plenty of old traps—if they are open so much the better—with the springs tied to prevent their catching.

3. A common horn lantern lighted answers very well. The lantern should never be left more than two nights in the same place. Get any lantern tolerably weatherproof, with three or four bulls' eyes in the sides and suspend it from an ordinary kitchen bottle-jack in the middle of the birds. The lantern should burn oil, a strong light is not necessary; the revolving is the important part. Of course the light must be gradually introduced to the birds, otherwise they will be as much scared as the foxes. It may be done by degrees while they are young, and as they grow up and begin to lie out of the coops they will not care about it. There is a little

management required in adjusting the height of the lantern, which of course must depend on the nature of the ground level.

A correspondent recommends a nautical lantern with three different coloured lenses for scaring foxes from young pheasants. It should be hung so as to keep revolving.

NETTING GAPS OR GATEWAYS, TO PREVENT.

Cut some wooden pegs a foot long and about an inch thick, and drive them into the ground slanting towards the wall and projecting about six inches. Let there be two on each side of the gap, or gateway, one of them a foot from the wall and the other a foot further off. It follows that the instant a hare strikes the net the foot of it is caught and held by one or more of these pegs, and the top is sent flat into the field.

RABBITS.

BOLTING OF.

Dissolve two drachms of nitrate of potash in an ounce of water; wet an ounce of tobacco with the solution, freely sprinkling it with Cayenne pepper (say about half a drachm); let it gradually dry in the sun, or by a slow fire. Put about a common tobacco pipeful in the mouth of each burrow; ignite it by a lucifer, and close the opening.

Again mix 2oz. of gunpowder with 2oz. of powdered charcoal, and 1oz. of cayenne pepper; then make one dozen parcels of the powder with brown paper soaked in solution of nitre and well dried, having a tail end about 3in. long for ignition; then firmly tie a packet on to the thicker end of a blackberry branch, two or three yards in length, allow the tail end to be towards the operator, and when it is well ignited, rapidly pass it into the hole as far as possible.

DRIVING AWAY.

Add to every four gallons of gas tar 1lb. of sulphur vivum (black sulphur); incorporate it by stirring well together; make up little wisps or handfuls of heath, furze, or dry fern, or even straw or rubbishy paper, or any combustible; whip round these wisps about three straws, to hold them in bunches; dip them in the above mixture. Thrust one of these prepared wisps into every hole, and following up with a torch set light to it. Damp, dull windy weather is the best to carry out the above, as the rabbits are pretty sure to be almost all at home in their holes. In many places where the rabbits abound, heath, furze, fern, or dry grass is plentiful; and if it be collected in handfuls, and the tar, &c., taken to the spot, the material can be then and there dipped and thrust into their holes, without the trouble of tying in bunches or, wisps, which need only be done for convenience of conveyance. After giving their locality two or three good fumigations, stop up their holes: the earth is stenched for a long time after. If any rabbits are bold enough to venture another attack in future, you have only to take the matter into your hands in good time. No one that is troubled with rats ought ever to be without this mixture in an old pot, bucket, or can; and a brush made with stiff straw will do to daub their holes and runs in order that they cannot emerge without taking some with them, which seems a terrible nuisance to those crafty vermin. Where the rat locates about dwellings, outbuildings, &c., it is not safe to set fire to the materials; if they are outdoors, in banks, or drains, the rabbit notice will do just as well for them.

DISEASES OF.

Canker in the Ears of.—Get one drachm of nitrated ointment mercury, mixed with one ounce of cod-liver oil (by some chemist), apply night and morning with a small brush; at the same time give a teaspoonful of milk of sulphur in a bran-mash every other day, and well wash the ears twice a week with soap and hot water.

Or: Pour a little sweet oil into the ears.

Eating their Young, to prevent.—It is a natural propensity for the doe at the time of kindling to lick her young clean, to eat up the *placenta*, and bite off the navel string. Thus, if irritated or disturbed, they are liable to bite off also the feet and ears, and sometimes to eat the young. Thirst or puerperal fever is often an exciting cause. Let the doe's bed-place be well furnished with soft straw or hay a week before her time expires, and allow her water to drink, or at least a large supply of succulent green food. Give the does while suckling a pan of bread and milk sop daily. All rabbits drink water in hot weather, though their green food is unlimited.

Scours, to cure.—Give a fluid teaspoonful of grated rhubarb root as when mixed with water (in the ordinary way) for children.

Slobbers, to cure.—Use three grains of chlorate of potass dissolved in a teaspoonful of water and given three times a day. Two or three days appears sufficient to effect a cure.

Again: The disease some say is produced by overfeeding upon green meat. Stop the supplies, and give a little bean meal mixed with lime-water, to astringe the bowels.

ESTABLISHING OF.

In some parts of the country rabbits are apt to become quite a nuisance, and there is no difficulty whatever in establishing them. This applies most especially to sandy and chalky districts. On clay, however, matters are different. Rabbits do not like clay from the difficulty they have in burrowing, and even when once established they do not increase very fast, as the nests are so liable to be drowned out. In such a soil we have found that wood ricks placed on the driest spot, and if possible next a hedge, is a great encouragement to them.

Turn a few loads of sand in a heap over some old stumps and tree roots, and cover it in with a good wood rick well pinned down. This will answer admirably. Another good plan is to select a dry sandy soil, and plant some furze by sowing the seeds in patches. Then make a few artificial burrows, which will be safer if they are enclosed by wire net for a short time—that is, till the rabbits turned into them become reconciled to their new abode. They should be fed on carrot tops, parsley, dandelion, or any food they are partial to; and, treated in this way, there is no chance of their leaving for other quarters. The best time of the year for beginning is the autumn, when half-grown rabbits should be turned down, in the proportion of three does to one buck. By the spring the does will be old enough to breed.

When once the rabbits are established, they will soon spread to the neighbouring hedgerows, especially if some artificial burrows are made for them under the roots of trees, &c. They will, however, soon make "heads" for themselves, and when once they have done this, there will be little fear of their not doing well.

Cut trenches about nine inches deep, six wide, and ten yards long, two feet apart; bisect them by the same, throwing the earth upon each square mound. Cart sand, and cover so as not to fill the trenches too much; then pile up roots, largest outside, three feet high, over the excavations. Make several of these and the rabbits will soon multiply.

Again: Dig down as low as you please a circular pit, of equal depth all round, and as large as you like. Throw the earth aside, and fill it with sand or a light earth well trodden in. Pile upon this stumps of trees and other endurable rubbish to a proportionate height, filling in the interstices with the mould taken out of the hole. Have a dark chamber leading from its centre, and lined with iron-clamped wood. Let the opening of the latter be just without the pile, and beneath the surface of the soil. Between this and the pile a loose lid should hang upon hinges to be fastened at pleasure, and only opening one way to let the rabbits enter the box, to which a lid or padlock should be attached. The latter contrivance is to provide yourself with a few rabbits without any trouble, but when set should be looked to every day, as the animals may be starved if food be not left therein. In this way any yard or bit of ground may be converted into a warren, provided it be properly stocked.

Again: Commence by laying short drains, about ten feet long and six inches below the surface, in different parts of the wood and the field adjoining. These drains are laid with the old 4in. tile, so that the soil is open at the bottom; from these run branch drains in different directions both under and to the surface. Into these drains turn eighteen tame doe rabbits (the tamer the better for the purpose); these will soon be joined by several wild buck rabbits from the adjoining fields, and in the course of a few months they will form a first-rate colony. The does, being tame, never leave the neighbourhood of the plantation, but induce many stragglers from other parts to settle amongst them.

Again: Sow plenty of furze-seed round the cover; let it be quiet for a season or two, and keep the dogs away: have a few good wood piles here and there in the cover; and feed the rabbits in the winter with turnips and hay. Make for them a place of refuge, and give them a few loads of swede turnips in hard weather. A sufficient harbour may be made with faggots or old roots; but, perhaps, the best way would be to dig out a number of 2ft. drains, tolerably close together, and with an ample fall to keep them free from wet; then close the drains as in turf-draining, leaving both ends open; and cover the hole with a few waggon-loads of kids or faggots. When the rabbits are set at liberty they should be put into the drains, or they will wander off, and perhaps never find the burrow.

Before making a burrow or stocking a covert with rabbits, plant laurels and sow gorse, as a belt of four or five yards broad, all round the inside of the plantation hedge. In two years this wonld make a little bottom-cover that would be a protection to rabbits or pheasants.

Dig up the soil very loosely about two spits deep, and about a yard and a half square; then with your hand scratch out a hole about a foot and a half long at an angle of about forty-five degrees, and then fill it up with very small broken stones, with a little earth, so as to leave about six inches of the hole open. Cover all the ground behind the hole with newly-cut Scotch fir-boughs. The fir-boughs should be cut from near the top of the tree, being green, and, of course, softer than the lower ones, as the bark of the latter is hard and brittle. The boughs should, by rights, be placed at the back of the hole so as to leave a space in front of the hole open, when some inquisitive old buck coming to eat the bark will see the hole and newly dug-up ground, and will begin to scratch out the loose stones to see what is behind, which will be the commencement of the burrow, and will soon be visited by others, who will perform the same operation, and so on.

RIFLES.

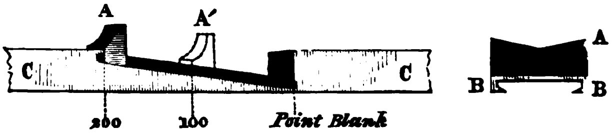
RIFLE TARGET TO MAKE.

Sail or sackcloth folded three or four times, and hung upon an extended rope or cord, answers extremely well for rifle practice; and as the shot and shells fall to the ground without injury, the shooter can use them over and over again without losing one.

THE "BLACK BUCK" SIGHT.

Most sportsmen who have shot much with the rifle at game in a forest country complain of the awkwardness of the present folding back sights for quick shooting. What is required is a sight that can be rapidly and correctly adjusted for any distance between point-blank and 150 or 200 yards.

The sight-piece A slides on an inclined plane *cut in* the *rib* (C C) of a double rifle; A shows it adjusted to a lower elevation. The distances are marked on the face of the inclined plane, and, as a considerable space thereon answers to a slight difference of elevation, it acts as a sort of rough vernier, and gives great accuracy and facility of adjustment.



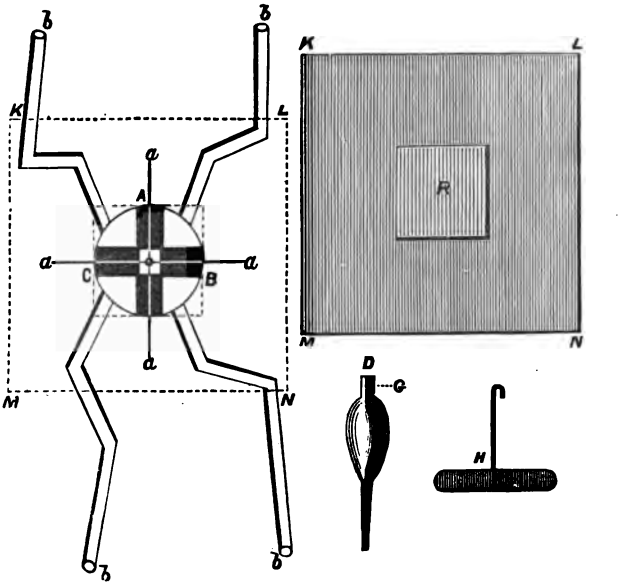
The distance up to which this description of sight will be available without an immoderate height of rib will of course vary with the shooting of the rifle. Its use, it will be observed, does not interfere with that of other flush sights for longer distances.

The front elevation of the sight-piece shows the side springs B B, which work in the grooves on the rib: one of these might be fitted with a side screw to tighten or loosen it, as might be required.

TRAPS.

BIRD-CATCHER'S TRAP.

The great point in this system of trapping is that it is carried on *under ground.* The following is the description: The circular apartment, *A B C*, 14in. deep, or more according to situation, and 14in. in diameter. The central pin *D*, 16in. long, and 12in. or 14in. in girth in the widest part, which is driven down 6in. deep in the centre of the said floor, and which would be all the better for being shod or pointed with iron. *G* is a small gimlet hole (afterwards charred with a red-hot skewer), through which twine is threaded and a reef-knot formed in the centre. The twine is next passed round the pin's head, including within it the necks of half a dozen small birds, adjusted equally all round it. Lastly the ends of the twine are drawn taut, and another reef-knot secures all. The projection of the pin prevents the vermin snatching hold of the suspended birds, and tearing them down; whilst the scent of the latter is a powerful inducement to the former, if not to remain permanently, at the least to become pretty constant visitors. The wooden cover *K L M N*, 3ft. square and (say) 1¾in. thick, and having two battens on the underside, to prevent its giving way in case of cattle treading upon it. This door is let into the ground so as to be firm and level. It covers the circular apartment, the trap handles and a portion of the burrows, the exposed or open part of the latter yet remaining being covered with plane tiles or flagstones in an effective and workmanlike manner. A large flagstone, indeed, might be substituted for the wooden cover itself. When the latter is laid down permanently it is covered all over with earth, and then sodded, except in the centre, where a loose sod, 1ft. square, is placed, and occasionally renewed. The small door *R*, 1ft. square, sawn a bevel out of the centre of the wooden covers, and having a counter-sunk clenched iron staple in the centre, into which *H*, an iron hook is inserted, by which means the door is easily raised, though not otherwise, especially if it be swelled a little from rain. The four handles of the traps *a*, *a*, *a*, *a*, with their guards drawn forward to prevent them striking when the vermin run upon the bridges, and the guards must never be drawn back until the vermin are perfectly familiar with the burrows, and perfectly *at home* in the circular apartment. These handles are let down level with



the floor of the said apartment by means of narrow grooves dug through the circumference, and a sufficient length beyond it to admit them. The mouths of the four burrows, *b*, *b*, *b*, *b*, which ought to be narrow enough to exclude leverets, and which burrows ought never to be shorter than 4ft., whilst six or seven feet are not too long. Pipe-drain tiles 4in. in diameter and twelve or fourteen inches long would form appropriate mouth-pieces to such burrows.

When feeding any kind of vermin preparatory to catching them, always avoid glutting them with food. But feed well, especially at first, until you have reason to believe that all within a certain space around your establishment have become acquainted with it. At first then (besides six birds on the central pin, and which will remain intact or nearly so) put *one* bird into the mouth of each of the four burrows, pushing each eight or nine inches inwards to prevent the chance of a stray cat's paw. Then at the mouth of each of the best *two* burrows peg down a bird with his neck in a cleft stick three or four inches from the ground, and place also some feathers at the mouth of each burrow. If the two outside birds disappear and not the inner ones, you may suspect the prowlings of a wild-tame cat. Peg down fresh birds, and spread sand about them, which will betray any future footprints, and if of a cat, no such animal must be allowed to come near the burrows. But if the inner birds are taken, then all is right, and then you must feed the most in the central apartment, and soon afterwards exclusively in it. But when you determine to draw the guards back for catching, then let there be no feed of any kind either in the burrows or in the central apartment; though the birds suspended from the central pin-top must still remain; and when you cease catching feed again. No better birds can be used than larks and yellow-hammers, especially the former. Never have fewer burrows than two, because vermin like to have their exits and their entrances; and the burrows would be preferable if more or less crooked.

The locality for fixing these traps is where two hedgerows intersect each other at right angles—one has the choice of four corners for digging the central apartment and the burrows; and the mouths of two of the latter must be placed or terminate close to each of these hedgerows, no matter whether the burrows themselves be winding or straight ones. As a rule, the traps should not be fixed on the ditch side of the hedge, and a slight elevation or low hillock with a gradual slope downwards all round is perhaps the best site of all, though a level spot answers well if the ground be dry; and, if necessary, the whole may be fenced off secure from cattle with very little trouble or expense.

Where the soil is a clay one, the sides of the burrows will of themselves stand firm without falling in; but in a sandy or loose soil, permanent brickwork or boards are absolutely necessary; but, even in this case, the first cost is trivial and the only one.

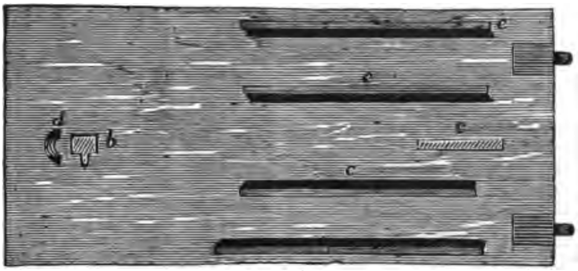
EGG-TRAP.

The safest way to use the egg-trap is to put it on the top of an old stump, or on a wattled hedge, or pollard tree, if in the season when pheasants and partridges are laying, because the young birds of both sorts are apt to lay to an egg that seems to entice them to do so.

"HIGH ELMS" TRAP, THE.

Fig. 1 is the lid of the trap, made of unplaned deal, 20in. long by 14in. wide, and ¾in. thick. *a*, Staple to receive the end of Fig. 6 when set *b*, Hole in board to allow free play to Fig. 5. *c*, Hole for neck of trigger (Fig. 4).

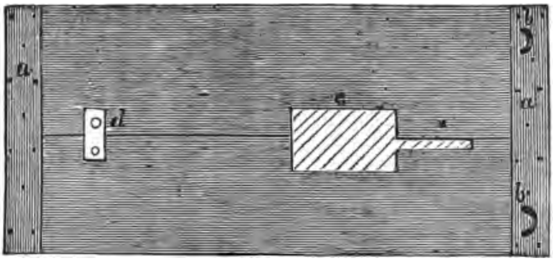
FIG. 1.



20 inches.

d d, Hinge (as at Fig. 7). *e*, *e*, *e*, *e*, Strips of sheet-iron turned up ½in. on one edge to hold down vermin. (N.B. These are shown as they ought to be placed on the under side of the lid.)

FIG. 2.



22 inches.

Fig. 2 is the floor of the trap, the same as Fig. 1, but two inches longer; *a*, *a*, Battens, 2in. wide and ½in. in thickness. (N.B. It is necessary to make the floor in two pieces, so as to put the trigger on with a screw at *x* in Figs.

2 and 4.) *b*, *b*, Staples for hinges (see Figs. 7 and 8.) *c*, Hole to be cut out of board previously to nailing together, which hole must be 4¾in. by 2¾in. *d*, Place where iron radius (Fig. 5) is screwed on.

Fig. 3 is the trap as set.

Fig. 4 is the trigger and plate. From notched end to *x*, 4½in. From *x* to *o*, 3in. The plate is made of sheet-iron 4½in. by 2½in. It is riveted on to the trigger, which is flattened underneath for the purpose.

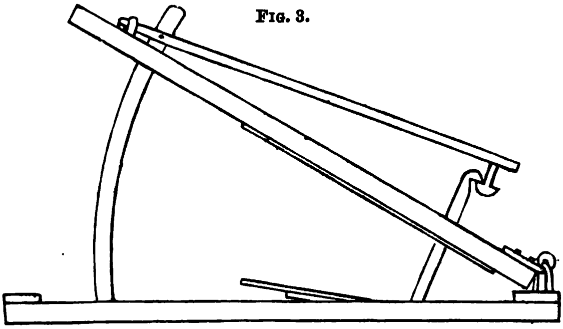


FIG. 3.

Fig. 5.—Iron segment made to a 15in. radius. It is ¾in. wide by ⅛in. thick, and turned at a right angle at foot, with two screw holes to fasten to Fig. 2 at *d*. Half an inch from the top a pin ¾in. long and ¼in. thick is riveted.

Fig. 6.—Wooden lever, ¾in. wide and ½in. thick, to reach from top of trigger when set to staple at *a*, in Fig. 1. It must only just reach into the staple. Two inches from the end (as at *z*) must be a hole, in which the pin described at Fig. 5 must work easily, and at the other end must be a small nail, such as a lath nail, to catch the notch in Fig. 4 when set.

Figs. 7 and 8 are the hinges.

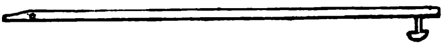


FIG. 6.

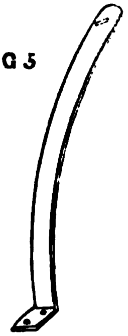


FIG 5

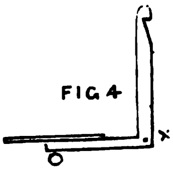


FIG 4

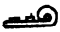
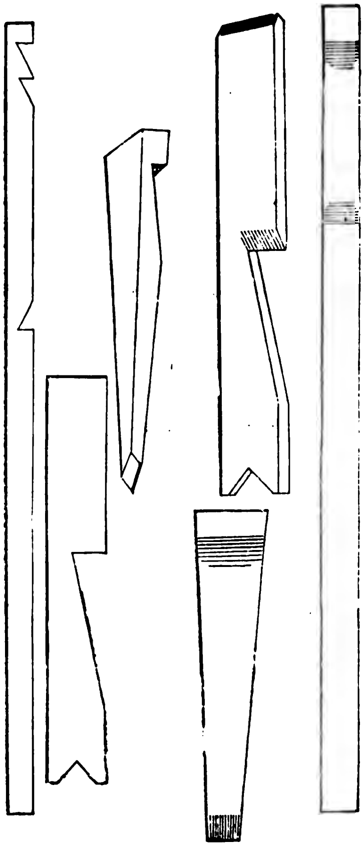


FIG 7

FIG 8

Directions for setting.—Open the lid till it falls back. Cut a piece out of the top board or lid, 8in. diameter, just over the trigger-plate ; nail a piece of wire netting on the under side. The mesh should be about ½in. Put the bait into this hole, and cover it with a flat stone that is not too thick to touch the lever of the trap when set. Turn the lid back, and, having put the lever on to the pin with the nail downwards raise *that end* till the nose of the lever catches under the staple ; depress it till it will catch under the notch of the trigger. As the mere weight of the lid will not suffice to hold the nail and trigger together or to kill the vermin when the lid falls, two stones above two pounds weight each must be put one on each side of the lever. In fact the lid must be weighted till it will not fall without the trigger plate being lightly touched. The trap must be painted over with the following mixture to make it the colour of an old slate; ½oz. of powdered alum, 1oz. of burnt umber, 1½oz. of lamp black. The whole to be dissolved in three-quarters of a pint of dark ale or porter. It will be dry (in the sun) in an hour. The only thing that the trap requires to keep it infallible after rain, is to rub the least bit of mercurial ointment on the notch at the top of the trigger and the nail head in the end of the lever. If this is not done, it will (like the catch in a steel trap), rust, and consequently stick.



"HIGH ELMS" FIGURE OF FOUR TRAP.

The trap in the drawing is set in the same form as the old sorts. The actual difference is in the way the stretcher fits to the upright. The least weight placed suddenly on the bait causes the stretcher to drop down, and from the upright being made wider than in the old plan, and having a forked foot, it does not turn round. The ground close in front of the slate, when down, must be a trifle lower than the slate itself, or the stretcher will be broken or bent when the slate falls.

PITFALL TRAP, THE.

The pitfall trap is useful principally for hedgehogs. It should be placed by a fence or wall.

VERMIN TRAPS.

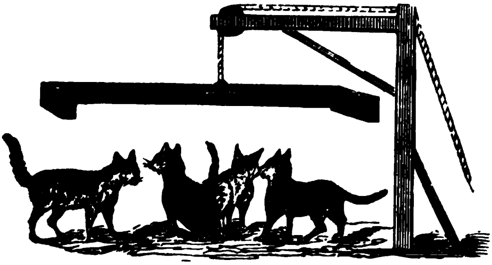
Build a brick vault in the covert, 4ft. square by 4ft. deep. Over it place a balancing board, made to turn easily. This will catch vermin of all kinds.

VERMIN.

CATS, TO DESTROY.

Get some powdered valerian, from a chemist, put some into a flower-pan, and fix it on the ground by four pegs, so that the cats cannot upset it. One of the pegs should be longer than the other, on the top of which put a piece of red herring, having previously put into it a little strychnine.

Also, buy sixpennyworth of valerian, and, after putting as much as can be taken up between the finger and thumb in some boiling water, throw it over a trap lightly covered, or half a dozen traps. Another plan is to get a large slab of iron hung about two feet above the ground, which might be freed easily by a jerk of the string which fastens it. Under this put the valerian, and kill five or six cats at a time—as shown in the accompanying sketch.



Again: A live mouse, as a bait, inclosed in a small wire cage, suspended to the trigger of an old fashioned box-trap.

An improvement on the old box-trap is the following: Instead of a door at each end have only one (set on the same principle as the old one); at the other end make a compartment some nine inches square, or according to the size of the box, parted inside and out with perforated zinc, the holes little larger than the size of a pea. In this place keep and feed either a small rabbit or a mouse, and no cat or small vermin can go by without going inside and being caught, as the live bait can be seen from the inside as well as out; but the entrance and door must be lined with the small perforated zinc, pinhead size.

Again: Take a large square trap, half as large again as a rabbit trap. The spring may be a bow or a flat spring. The trap should be set under a bank, forming one side of a " ride " in the covert, if there be a bank, and, if not, under any wall in the covert, but near a road. Hang the bait to a stick thrust into the wall or bank, and let it reach to about eighteen inches of the trap which must be set to range with the wall, and not at a right angle with it. Roll up a bit of cloth into a ball as large as a nut, and when tied tight drop a dozen drops of good tincture of valerian on it, and tie it under the bridge of the trap so that the rain does not wash it.

A most deadly place to set for a cat is on the top of a wall where it crosses a brook in the covert. Have one of the copings hollowed out for a trap, and there set it, but with no bait. A cat will always prefer to cross water on a wall instead of jumping the stream, even if only 2ft. wide.

POLECATS, ETC., TRAPS FOR.

Traps for polecats, weasels, and stoats, are set under walls, as for cats; and the bait—the inside of a fresh-killed rabbit—hung over the trap. Mind to set the trap with the catch next the wall; as, if set the other way, a weasel may not have weight enough to press down the lever and spring the trap. If there are loose walls about it, it is worth while here and there to pull a length of wall down—say a yard—and have it built up again and "grouted." By so doing, you force any weasel that may be running in the wall to come out; and here you must set the trap. A board built into the wall, so as to cut off the communication, will answer the same purpose.

Scent the bait with musk.

It is a good plan to make an artificial drain and place traps unbaited at both ends.

Put pieces of poisoned meat as far as you can into rabbit-holes. They may also be killed by poisoned meat placed in the runs.

TRAPPING.

The first thing is to see that your trap goes off properly, not for the treadle to bear a pressure of four or five pounds when set for rats or stoats, or to go off with the weight of a mouse if set for cats. The traps are easily adjusted by flattening the end of the wire which goes over the falls of the trap, where it goes under the treadle wire, and the treadle wire itself may be flattened also, if wanted to go heavier; and by beating or filing the same narrower if wanted to go easier for weasels, blackbirds, &c. The next step is to find a proper place to set them. In some positions they may stay for weeks and nothing enter.

The best spots for trapping all kinds of flying vermin, such as magpies, crows, &s., are narrow belts of plantation, or at the sides of streams and lakes; or in coverts where there is not much underwood, and which are a little open above; in fields, by the fences or near a few shrubs or trees. For crows, in the open, a fresh sheep's head fixed to the ground or a tree is a good bait. The head may be surrounded by traps, or poison may be introduced into the eyes.

For setting traps: If in plantation, choose a rough tuft of grass; divide the grass at one side of the tuft, so as to form an angle; at the point or apex place the bait. Place the trap, which must be set so as to go easily off, at the entrance, leaving a space of four or five inches between the bait and the trap; pull a handful of withered grass and cut it very small with a knife, and cover the trap and a small space round the trap with it; but by no means fence it round with branches, as that makes it look too suspicious. The most fatal place to set a trap is at the side of a stream or pool of stagnant water. Cut a sod a little broader than the trap, and put it into the water, so as to form a sort of isthmus about a foot in length; place the bait on the extreme end of it, and the trap six or seven inches from the bait, and cover it as before; the sod should be almost on a level with the water. The baits are egg-shells filled with moist clay, and fixed on the point of a small peg stuck in the ground or sod, and young rabbits cut open, which must be firmly fastened to the ground by pegs, for ground vermin—cats, weasels, &c. Old stone walls, hedgerows, and water-sides, are the places where they frequent. If the egg-shells are dusted over with plaster of Paris, and placed two or three together as if in a nest, they will last a month, and the effect is heightened. Carrion crows may also be killed by placing a bait and a trap or two in a ploughed field. Put no sticks round it, but make a piece of ground plain, half hide your bait, and set a trap or two near it. The edge of a manure heap does well. When crows, magpies, or hawks have young, the old birds may be taken thus: Take down the young, take two or three of them, tie them together by one leg each; tie a short pin to the three legs, and put it in the ground to keep the birds from moving; put them down at the foot of an open tree; put some small upright sticks on each side close up to the tree, having an opening in front; then set a trap neatly, taking care to keep the trap at a distance, so that the young ones do not spring it with their wings; and you may rely on having them.

In coverts, for cats and other running vermin, the best positions are in runs by walls or sides of the fences, in dry ditches or mouths of drains, in runs by or through banks, or artificial runs made with sods or other materials; in fields, by the fence sides, dry ditches or mouths of drains, particularly under gateways.

Running vermin are easily trapped, provided the bait is firmly fixed, as they pull and leap about until they go into the trap. Traps should be shifted every time that a death is effected, and should be visited in the forenoon and evening if possible.

For rats, in runs where they come to feed, by walls, rick sides, or places which they appear to use the most. When the runs appear stale or not much used, the traps should be shifted to other places. For rats a great variety of baits may be used, but the best is generally something like what they are in the habit of feeding upon on farm premises; grain, with sufficient chaff or cut hay to cover the bottom, meal mixed with sweet broth or small bits of meat. Rats may be enticed with oils of aniseed, thyme, or rhodium; and when traps are new and smell of the shop, a few drops should be rubbed inside the bottom of the traps, to take the other smell away. By using a drag of these oils rubbed on a herring or piece of clean rag, rats may be enticed a long distance.

The baits to suit the different tastes are very various. The most universally liked by cats, stoats, ferrets, and rats are the drawings of poultry or game. The best substitute for this is young rabbits in pieces, or even old ones ditto will do; or pieces of woodpigeon, with the feathers put inside also. In poultry yards where any depredations are done, one of the dead young ones is a good bait. Stoats, foumarts, &c., are enticed by fresh blood; a rabbit, recently killed, and the blood from the inside sprinkled over the trap, is very good.

Another good bait is as follows: Get a lot of small fish (sprats would do, or any that contain a large quantity of oil); pound them up, and put them in glass bottles well corked and hung in the sun for three weeks; they will have decomposed, and the oil will come out. Some of this should be put on a rag fastened to a string, and dragged about in different directions from a common centre (the trap), and the man who looks to the traps should drag this after him from one to another as he goes his round. The baits should be roasted salt fish; a few drops of the oil can be put on the bait. The traps should always be made and set with gloves on, as the smell of the hand is fatal to trapping.

Bait should always be placed so that the animal in attempting to take it shall put a foot on the pan. Place the bait either on a stick above the trap, or in an inclosure so arranged that the animal will have to step over the trap to reach it.

APPENDIX.

RECIPES FOR THE MANAGEMENT AND CURE OF DISEASED DOGS.

BITES.

Dog Bites.—Sprinkle over the wounds a powder, consisting of equal parts of pulverised alum, sulphate of iron, and myrrh.

Vipers' Bites.—The immediate consequence of the bite is considerable inflammation, with an indication of much suffering on the part of the dog. It is said the common burdock will effect a cure. Slice or scrape a large handful of the root, and pour upon it about two quarts of boiling water When this infusion is cool, foment the bitten part with it many times a day, and pour about half a wine-glass of it down the dogs' throat three or four times a day.

Again: Warm sweet oil applied externally, and brandy internally, together with warm bathing, will speedily effect a cure.

Viper's fat applied externally and olive oil given internally is a remedy. In any case, the dog ought to be sent home immediately, and he should have as much milk to drink as he can swallow, as he will not be able to partake of anything solid under two or three days. Spirits of hartshorn mixed with the olive oil will also be found an excellent remedy as an external application. Volatile alkali is also another specific, administered internally with the oil, from six to twelve drops, according to the size of the dog; it also may be applied externally. The part bitten must be kept continually moist with the oil and hartshorn.

Again: If you can detect the bite, apply laudanum first, and then saturate the part with oil, permitting the patient to drink a teacupful of the oil if he will take it.

Or, if you observe the adder's bite soon after it has been given, scraped chalk, or soda, may be rubbed upon the bite with good effect, as it will absorb the poïson not already taken into the circulation. The adder's poison affects dogs differently, and it is more venomous at one time than another.

BLINDNESS.

Blow into the eye, when the disease is coming on and the film is growing, some cuttle-fish powder through a quill. If this be continued it will cure the disease if only accidental. Fine sugar used in the same way, will have a like effect. The eyes should be well cleansed with warm water previous to the operation.

Again: Give, first, a dose of castor oil and syrup of buckthorn; the eyes must be washed daily with warm water, and a lotion applied twice by dropping a little into each eye. The lotion is made of 1 scruple of sulphate of copper diluted in 4oz. of water. Keep the dog warm and dry, feed moderately with flesh, if usually given.

Again: Take pumice-stone, and by rubbing two pieces together you will procure a very fine powder, which must be rendered finer if possible. Then taking as much as will lay upon a sixpence, or more, open the dog's eyelid and put it inside. Do this night and morning, bathing the dog's eye with alum and cold spring water a short time before.

BROKEN BONES.

A Correspondent of the *Field* writes: The symptoms of fracture will vary according to the position of the injury. In some cases very little pain appears to be experienced by the animal, while in others there are signs of extreme suffering. The local indications of fracture are generally very evident, consisting of distortion or alteration of the normal outline; movements where no motion exists in the sound condition of the part; crepitus, the grating sound which is the effect of the ends of the broken bone rubbing against each other; swelling of the part; great sensitiveness at the seat of injury; and, when the long bones of the extremities are implicated, a pendulous condition of the limb. The constitutional symptoms include quickened breathing, perspiration, distressed countenance; quick and full, or weak pulse, according to the duration of the pain and amount of exhaustion. Partial or total unconsciousness, as a symptom, should use you to suspect injury to the region of the head; loss of sensation and motion will suggest fracture of one of the bones of the neck or back; the leg being held up in a pendulous condition is a sign of fracture of one of the bones of the extremity, most probably a long bone. If the parts are only fractured, and no displacement has occurred, no mechanical aid is necessary. In order that the union of the fracture may take place in the most ready manner, it is necessary to place the edges of the broken bone in contact, and as nearly as possible in their natural position. To do this will require at times some degree of force, carefully applied, and regulated by a practical knowledge of the anatomy of the part. When the adjustment is complete the outline of the bone should be traced throughout, and if found to be perfectly regular, the operation may be considered so far satisfactory; and it only remains to employ some means to prevent the subsequent displacement of the portions of bone which have been brought into apposition. For this purpose various contrivances are in use; adhesive plasters, bandages and splints are, under different circumstances, adapted to afford the required support; but of all methods the most efficacious and simple is the starch bandage, which is especially adapted for the treatment of fractures in dogs. Splints may, if necessary, be employed in conjunction with the starch bandage, for the purpose of giving the necessary firmness while the starch remains wet; but in most instances they may be dispensed with. In applying the bandage it is only required to soak it for a few minutes in starch, made exactly as it would be for use in the laundry; the bandage is then to be rolled up in the usual way, and evenly unrolled round the leg—in the case of a dog, commencing at the toes, which should be entirely developed, otherwise swelling of the exposed part will certainly occur, and being thence continued to some distance above the point of fracture. In the course of half an hour the bandage becomes hard and forms a perfect mould, in which the limb must remain encased for five or six weeks, when it may be released by cutting the bandage completely through, or removing it piece by piece. When a fracture is situated in such a position that it is impossible to use a bandage—as in fracture of the shoulderblade, or other bone surrounded by a mass of muscle—the end may be gained by the application of a charge composed of pitch and resin melted together. and spread over the part while hot, and immediately covered with a quantity of cow-hair, or the hair which may be cleared out from a currycomb; either of these will form with the pitch a firm plaster, which will adhere with tenacity for weeks. Blisters have also been found useful in cases where no other means of restraining movement offered themselves; but the charge is to be preferred, as its employment is unattended with pain.

The fracture having been adjusted and the bandage applied, very little further treatment is necessary. Cold lotions are beneficial if inflammation sets in, and under such circumstances cooling diet and laxative medicines will also be indicated. Dogs seldom suffer much constitutional irritation from fracture. The great difficulty with them is to prevent the bandage being gnawed off. This may be done either by coating the surface with melted pitch, or by fixing some apparatus upon the dog's head. The most simple form of shield is made of a round piece of cardboard, or the lid of a bandbox, having a hole in the centre only large enough to accommodate the animal's neck. A slit is then to be cut on one side of the hole, so as to allow the apparatus to be passed over the head.

The shield is to be afterwards fastened by a piece of string or tape, which is laced through holes on each side the slit. In this way the animal's head is practically cut off from all communication with his body, while there is no interference with his freedom of movement; and after a few efforts to free himself from the incumbrance, he becomes resigned to his position.

BROKEN WIND.

Benzoic acid, 1dr.; Peruvian balsam, 1dr.; powdered gentian, ½oz.; oil of aniseed, ½dr.; divide into six pills, one to be given night and morning with slow exercise.

CHOKING.

Dogs are frequently choked in the attempt to swallow. Sometimes the piece of meat or bone is too firmly fixed to be removed by the animal's own efforts, and it will require to be extracted either by the aid of the fingers if it can be reached, or by means of a pair of forceps, if such instruments are at hand, but generally there is little time to spare, as a dog is very readily suffocated. If the obstruction is too far down to be reached and drawn up, some kind of probang must be employed to push it into the stomach, a long candle may be used as a probang with excellent effect. The administration of fluid medicine often chokes a dog. Use the stomach pump to give such medicines, which is very easily done. In "drenching" a dog never hold him between the legs, it is very apt to cause choking and often death. When a dog or other animal resists violently and cries out never administer fluids, it is sure to cause choking.

COATS OF DOGS.

Condition.—Feed on half-boiled horseflesh, and, as a tonic, administer daily on a piece of meat two drops of the arsenite of potash solution.

Again: Divide the allowance of food into two meals, one in the morning, the other in the evening, instead of giving all at one time. Half an hour or so before each meal give to a large dog a table-spoonful, to a middle-sized dog a dessert-spoonful, and to a very small dog a teaspoonful of pure cod-liver oil.

Again: Sulphate of iron, 2dr.; sulphate of copper, 12gr.; powdered gentian, ½oz.; made into a mass with a little treacle and divided into six pills. One to be given twice a day and continued until he appears better in condition and appetite.

Give small doses of tartar emetic (3gr.) twice a week, and feed the animals on oat-flour and pot-liquor.

Again: Take two parts clarified lard (without salt) and one of fine gunpowder. Mix, and give the dog a portion (for a greyhound, the size of a hazel nut) once or twice weekly, fasting. If the lard be sweet, and the gunpowder made very fine before mixing, most dogs will readily eat it when offered.

Improving of.—No dog that is out of doors, exposed to all weathers, can possibly look well in his coat; keep all the dogs under cover both winter and summer. In winter their bed should consist of the best straw, changed weekly; and in the summer of pine sawdust, renewed twice during each week. In the morning give the dogs each a few pieces of dry biscuit, but their principal meal should be at ten p.m. This consists either of soaked biscuit and dripping or of raw sheep's paunch. Twice a week boil a paunch, together with some biscuit and two or three carrots or potatoes. When done, thoroughly mash up the biscuit and vegetables together, taking away the meat. The dogs are sure to eat it when done this way; but if not well mixed, they are apt to reject the vegetable. Give them the meat afterwards by itself. Each dog must be well brushed every day for five or ten minutes. Under this treatment their coats shine like satin, and they are always well.

Weak mercurial ointment 1oz., soft soap 4oz., camphor in powder 1dr.; melt together in a pipkin over a slow fire until all the greasy particles are thoroughly incorporated. A piece the size of a walnut only is to be used at a time.

Dirty Coats.—Soak the hair for half an hour in soft warm water containing plenty of soft soap dissolved in it. Then brush the ears separately, laid flat on a piece of board, and by perseverance you will get the hair to lie straight, and the clots of dirt to come away, especially if a coarse comb is also used to assist the brush.

When not very dirty, ladies' lapdogs may be washed with the white of an egg, which forms a good lather; or else with the following mixture: Beat up the yolk of an egg with a pint of clean rain water; apply it warm, and afterwards wash off with warm water.

Rubbed Hair.—Apply equal parts of neat's-foot oil and spirits of turpentine daily.

Hair falling off.—Shave the hair cleanly off the body, and rub into the skin an ointment consisting of one part of biniodide of mercury to twenty-five parts of lard, and administer daily three drops of Fowler's solution of liquor arsenicalis.

Again: Wash the dog with soft soap and hot water, well dry him, and then apply all over the body the iodide of sulphur ointment, and administer daily, in milk, four drops of Fowler's solution of liquor arsenicalis. The application of the ointment must be repeated three or four times, and the administration of the arsenic for a month or six weeks.

Again: Rub in well, after being well shaken together in a bottle, equal parts of spirits of hartshorn and sweet oil.

Again: Apply grey sulphur, mixed with hog's-lard, ½oz. of the former to ¼lb. of the latter, well mixed and rubbed in all over his back to the parts affected. Also give him internally (at the same time, to purify his blood) some common flowers of sulphur, mixed up with butter or grease, either in his food or on pieces of bread the first thing in the morning (fasting) for three or four consecutive days.

Again: Burn the sole of an old shoe, powder it very fine, and mix 1oz. of it with camphor ½dr., oil of rosemary 1dr., lard ½oz., in a pipkin, over a slow fire.

CHRONIC COUGH.

Friar's balsam 1dr., laudanum 4dr., olive oil 3dr., mucilage of gum-acacia 1oz; mix and give one teaspoonful two or three times a day.

DEW CLAWS.

Removal of.—Draw the skin well back over the leg, and dissect the claws out at the joint. They may be cut off with a pair of scissors, but the wound is then a long time in healing.

DIARRHŒA.

Boiled cabbage will sometimes stop this affection in dogs. It is better to give the following medicine every two hours until the desired effect is produced; the amount given must depend on the animal's size: Powdered opium, ½gr. to 2gr.; powdered chalk, 5gr. to a scruple; catechu, 2gr. to ½ a scruple; liquor potassæ, ½dr. to 2dr.; powdered capsicums, 1gr. to 4gr. Feed the dog on two parts of oatmeal mixed with one part of branmeal, softened with fresh hot liquor free from salt. Warm fomentations should be applied repeatedly to the abdomen, and the above medicine given. An ointment smeared over the anus and introduced up the rectum, composed of the following ingredients, as recommended by Mayhew, will be found beneficial: Camphor powdered, mercurial ointment, elder ointment, equal parts of each.

Take bones that have been used in making soup by long boiling, then burnt to whiteness, and finely powdered; a pinch or two of this mixed with lard into a ball, may be given once or twice a day.

Give them the following mixture in sufficient quantities and often enough to check the diarrhœa: Laudanum 1oz., creosote 2dr., chalk mixture 7oz. Mix and give two table-spoonfuls every time they are purged. Feed on boiled rice or fine wheaten flour, flavoured with beef tea, and give no water.

The symptoms which present themselves in the commencement of this disease are shivering, loathing of food, the dog curls himself up in a corner, he sneezes, there is a watery discharge from the eyes and nose, the coat stands, and the body feels chilly, the eyes will be kept closed, and they will often ulcerate. When the respiratory organs are affected, there is great difficulty of breathing, oppressed pulse, tenderness on pressure of side, and short cough. These symptoms increase in intensity, and the animal often dies within two or three days. In the digestive system, sickness and total refusal of food occur, diarrhœa comes on, and these will terminate his life. The liver loses its functions and bile is thrown into the system, and the skin and mucous membranes assume a yellow colour. Before fits come on the animal has usually a great desire for food, has an anxious expression of the face, the body becomes rigid, and there is hanging of the lower jaw; then the dog will fall and lie in convulsions for two or three minutes. Very few recover after these attacks, though they may sometimes linger for eight or ten days, having fits at intervals.

The dog breeds most liable to distemper are the smaller kinds, as pugs, fancy spaniels, toy-terriers, Italian greyhounds, and those varieties which are artificially reared and treated; terriers, as a rule, have it worse than spaniels, and setters worse than pointers.

The distemper often is so mild in its attacks as to pass by unnoticed; but it always leaves a black mark or ridge on the dog's gums.

Prevention of.—Our own experience is that nothing we can do will prevent the advent of distemper. It is like the infantile diseases in the human subject, the vastly greater number suffer from them. As however many people think that if not preventable the disease may at least be mitigated, we give the various opinions enunciated by many correspondents.

Feed your dogs till nearly a twelvemonth old, on bread and milk or porridge and milk, and keep them free from damp.

It is said that linseed oil will prevent distemper. Begin with a teaspoonful twice a week for puppies eight weeks old, and then increase the dose to a dessert and table-spoonful, and if worms exist, add a small portion of spirits of turpentine, well mixed with the oil: To a puppy three months old give half a teaspoonful of turpentine, one of six months give a whole teaspoonful, well mixed with a teaspoonful of oil.

Some advocate the following: At the age of seven months, a soft piece of hempen cord, fully as thick as a quill, is attached to a common packing-needle, and passed along, for two or three inches, under the hide, at the nape of the neck, which is gathered between the thumb and finger for the purpose, the ends of the cord being tied loosely at the throat. For one week the cord is retained, and daily moved, or slipped round a little, and the neck and cord washed with lukewarm water, to cleanse from the matter discharged from between the flesh and the hide. Never allow these dogs to have any flesh meat during the time, their diet always being a thin porridge of boiled meal, and a supply of fresh buttermilk now and then. If no buttermilk be obtainable during the period of the retention of the seton, there should be given a dose or two of medicine (as syrup of buckthorn or castor oil), and also another dose after the withdrawal of the seton.

Some give a quarter of a pound of powdered glass, 1oz. of powdered gentian root, 1oz. of ginger, well mixed together with palm oil and divided into balls, varying in circumference from the size of a pistol to a musket bullet, according to the age and description of the animal. Puppies from the age of two months should have one every morning.

Vaccination for.—Some say that dogs, to be successfully vaccinated, must be treated with matter which has already passed through another dog. Double up the skin of the puppy's neck on the upper part, and through the fold so made pass a thick needle and cord. Tie the ends of the cord firmly under the neck, and try to keep it from shifting as much as you can. The part of the cord which passes under the skin must have been saturated with the variolous matter.

Again: Have ready two clean lancets, and the vaccine lymph upon a piece of glass. Breathe upon the lymph to soften it, but by no means dilute it with water or any other liquid. Take lancet No. 1 and rub it in the lymph, and then seize the pup, hold him between your knees, and slit a little pocket, as it were, in his ear. Then take lancet No. 2, which you must supply plentifully with the lymph, insert the point of it into the little pocket, and with the finger and thumb compress the skin over the point; after which you may withdraw the lancet, which ought to have left behind it a fair quantity of the lymph. Repeat this operation upon the other ear, and you may then consider your dog properly vaccinated. The proper time for vaccinating is directly after weaning; for if you do it before, the bitch will inevitably discover the little wounds, and will lick them clean, thus entirely destroying the effect of the operation. For this reason, the puppies that have been vaccinated should be kept carefully apart until the virus has become entirely absorbed.

Again: Scarify the inside of the ear, about the middle, where it is bare of hair; and, if possible, get fresh vaccine lymph from a child's arm, on a small bit of raw cotton. If this cannot be obtained, get the matter on glasses from any cow-pock institution; put one drop of water on the glasses, and wipe it off well with a very small bit of cotton, not larger than a fourpenny piece. Apply the cotton to the scarified ear, and secure it with slips of adhesive plaster. Fit a linen or cotton cap to the dog's head, and sew it under his throat, to prevent him tearing his ears, and thereby destroying the success of the operation. Leave on the cap for a fortnight.

Again: The armpit is a good place, on account of the large number of absorbents congregated there. A small piece of skin snipped out by a pair of scissors lays the part bare to receive the virus.

Feeding puppies that are to be vaccinated.—Feed puppies about to be vaccinated on Indian meal and milk (oatmeal is too heating) for three months. Then vaccinate, and give them the same food as the grown dogs, viz., Indian meal and soup made out of greaves, or poor veal, or coarse fish. The last is best of all.

Treatment of distemper.—Place the animal in a room or house of moderate temperature, and in a box or basket well filled with straw, but not near a fire or stove. A blanket thrown over the dog loosely may, in winter, be of service. Give 6gr. of calomel and 20gr. of scammony in a powder, dry on the tongue. Shut the mouth, grasp the throat for a few seconds; this compels the dog to swallow. In four hours after give 3dr. of Rochelle salts in 2oz. of infusion of senna. Await the operation of this for twenty-four or thirty-six hours, and, if the disease is severe or increasing, then give 2gr. of tartar emetic, dry on the tongue. Let the dog alone for eighteen or twenty-four hours more, and, if he is not getting on, give ½gr. of tartar emetic every eight or twelve hours, for two days.

Again: A couple of distemper pills once or twice a week, as needful; foment for ten minutes, at least three or four times a day, with water as nearly scalding as the dog can bear, the back of the head between the ears, by means of towels or flannels. Next mix two teaspoonfuls of tepid water with one of vinegar; drop into each nostril a couple of drops three or four times a day also; this carries off the filth and clears the head. Let baked salt be forced down the dog's throat until he begins to vomit, as soon as ever you suspect the disease is coming on. Should there be discharge from the nose and eyes, put a worsted seton at the back of the neck, rubbing it well with blistering ointment. The bowels should be well attended to, as they are sometimes confined, and sometimes the reverse. This is a very old remedy.

Again: In the early stage of this malady, after having well washed with soft soap and warm water, and dried the patient, place him in a scrupulously clean and well ventilated loose box, or large apartment, having previously littered it with straw sprinkled over with chloride of lime, and then administer (to a large dog) 2gr. of calomel and 1gr. of tartar emetic, and twelve hours afterwards ½oz. of castor oil. This treatment at the first onset will generally correct the constipation, or remove the internal irritating agent causing diarrhœa. If, after four or five days, the above treatment fail to give relief, the breathing becomes laboured, and a discharge flows from the eyelids, nostrils, and froth from the mouth, apply a mustard plaister to the sides of the chest, and administer twice daily sixteen drops of the syrup of the iodide of iron. If twitching of the muscles or fits supervene, give daily, in place of the syrup, ½gr. of nitrate of silver, and insert a seton in the poll. Throughout the progress of the disease feed upon strong mutton broth, twice daily, and with a table-spoonful of rum in it.

Again: The moment the pup's eyes and actions are noticed in the slightest degree dull, give the pup, if a couple of months old, two tea-spoonfuls of syrup of buckthorn every ten hours, in one dose each time. It may be given to him six times. The pups and the mother must be kept scrupulously clean and have plenty of fresh air.

Immediately on the first appearance of the disease—pull up by the roots a quantity of *Triticum caninum*—that coarse-leaved grass which dogs are constantly seen eating when let out of confinement. This well wash in cold water, and then take two good handfuls and boil them in about a bucket or four gallons of water. This, when strained, put by for use, the dogs must be allowed no other drink, and all their food should be mixed with it; this must be continued until all signs of disease have disappeared.

Again: One very important matter in the treatment of distemper—that is, the soreness of the throat—should be attended by counter-irritation. Apply an embrocation to the dog's throat, and in bad cases to the side also, consisting of 1oz. of turpentine, 1oz. of laudanum, 1oz. of ammonia, 3oz. of oil. Also give one of the following pills: 20gr. of opium, 20gr. of tartar emetic, made into ten pills. Give one every other day, and let the dog have exercise every day if he is able.

Again: First give 2gr. of tartar emetic, then 2gr. of calomel and 5gr. of jalap, administered thrice at intervals of a day. Lastly give three drops of liquor arsenicalis on meat morning and night.

Again: First, give 1dr. of antimonial wine; next 2gr. of calomel and 1gr. of opium; and, lastly, three drops of liquor arsenicalis on meat morning and night.

Again: For a greyhound, twelve months old, give 6gr. of calomel and 3gr. of opium; six months, one-third less. Pointer, twelve months old, 8gr. of calomel and 3gr. of opium; six months, one-third less. Setter, the same as greyhound. Foxhound, twelve months, 8gr. to 10gr. of calomel, and 3gr. at least of opium; six months, one-third less. In every case the most strict hygiene must accompany the treatment.

Again: Begin with 10 drops of chlorodine increasing to 20 twice a day.

The homœopathic treatment of dogs in distemper is the following: 1. When the disease begins with dulness, loss of appetite, quickened pulse and breathing, give aconitum, third dilution; dose from two to five drops, according to the size of the dog, every three hours. 2. When the eyes are inflamed and watery, and sensitive to light, the cough frequent and spasmodic, and the feverishness continuing, give belladonna, third dilution; dose, as for aconitum. 3. When the animal wastes in strength and condition, and has no appetite; when the discharge from the nose is thick, yellowish, tenacious, bloody, or offensive, and obstructs breathing; and when, in the last stage, all the powers of life are waning, and diarrhœa sets in, give arsenicum, third dilution; dose, as for aconitum. 4. When the eyes are inflamed and watery, giving out thick yellow matter, which glues the eyelids together, give mercurius, fifth dilution; dose, as for aconitum. 5. When the discharge is copious and mattery, sometimes mixed with blood, and offensive; when the eyes have a glassy appearance, and are covered with a whitish opacity; and when there is excessive purging and great weakness, give phosphori acidum, third dilution; dose, as for aconitum. 6. When ulcers form in the nose, and when the discharge is greenish and gluey (obstruction of the nostrils and frequent sneezing), and when the eyes adhere together from matter, give kali bichromicum, third dilution; dose, as for aconitum. Should distemper terminate in chorea, paralysis, disease of the brain, &c., ulcers on the eyes, and opacity, inflammation of the lungs, or other numerous complaints, the treatment must of course be changed to meet the particular disorder.

"*Stonehenge's*" *System.—General Treatment:* In the early stage give a mild dose of aperient medicine, such as castor oil and syrup of poppies in equal proportions; or, if the liver is not acting, calomel and jalap. After the early stage is gone by, give nothing in the shape of medicine, but keep the kennel dry, *clean*, and airy, but warm. Change the litter frequently, and avoid exercise till the cough and running at the eyes have entirely ceased. For several days the diet should consist of nourishing broths, thickened, when there is diarrhœa, with flour, rice, or arrowroot; or if the bowels are confined, with oatmeal. If there is little water passed, give 5gr. or 6gr. of nitre, with half a teaspoonful of sweet spirits of nitre, every night as a drench. *Head Distemper* requires very energetic local treatment in addition to that recommended above. From four to eight leeches may be applied to the inside of the ears, washing the part well with milk and water first. Then put in a seton to the back part of the neck, first smearing the tape with blistering ointment. If the head is very much affected apply cold water to it by means of a wet cloth, or, if that is not allowed, by the watering-pot. Calomel and jalap must be given to act on the liver and bowels, and a pill—consisting of ½gr. to 1gr. of tartar emetic—two or three times a day. As soon as the urgent symptoms have disappeared, the dog often requires supporting with beef tea and tonics, as described under the malignant form. *Chest Distemper* must be met with bleeding if there is evidence of inflammation; but if not it is better to avoid such a lowering measure and trust to antimony or ipecacuanha. Mix 1gr. of either of these with 1gr. of opium, and give two or three times daily. If there is long continued mischief apply a blister to the chest, or rub in mustard mixed with vinegar. When the breathing is more rapid than the pulse, stimulants will be required. *Distemper of the Belly*, attended with purging, requires the immediate use of astringents, of which opium is the best. There is nothing better than the following mixture: Take of prepared chalk 2dr., mucilage of acacia 1oz., laudanum 1oz., tincture of ginger 2dr., water 5½oz. Of this give from a dessert-spoonful to a table-spoonful every time the bowels are relaxed. The diet should be almost entirely of boiled rice, flavoured with milk or broth, and if there is much thirst rice-water only should be allowed. On the other hand, where there is a confined state of the bowels, which is generally attended with "the yellows," calomel, rhubarb, and aloes are the only remedies to be relied on. Take of calomel 3gr. to 5gr., rhubarb and aloes of each 5gr. to 10gr.; mix, and form into a bolus with water, and give twice a day till it acts freely. A turpentine enema may also be administered, but this requires some practical skill to carry out. Should bile begin to flow there is still great care required to avoid checking the diarrhœa on the one hand, while on the other the exhaustion caused by it is often frightfully great. Strong broths thickened with flour or rice must often be given by force, as the appotite is generally much reduced in this disease. Where there is much exhaustion from diarrhœa, arrowroot with port wine will be of use. *Malignant Distemper* is less difficult to manage than that of the head, and far less than the yellows when complicated with the ordinary attack. The great thing is to avoid reducing the system in the early stage, and to give at that time only such remedies as are imperatively required. A mild dose of oil, as described under the general treatment, will be of service, after which the less that is done the better till the usual weakness shows itself. In the interval it may be necessary to treat the case as one affecting the head, chest, or belly; but so soon as the excessive exhaustion shows itself, there is no chance of recovery without resorting to strong tonics and good food. For this purpose there is no remedy like port wine, or bark and ammonia—the former of which may be given mixed with an equal part of water, and with the addition of a little spice, such as nutmeg or ginger. For the latter, take of decoction of bark, 1oz.; aromatic spirit of ammonia, 1dr.; compound tincture of bark, 1dr. Mix and give twice a day to a large dog, or half the quantity to a small one. The greatest care here is required to support the strength by drenching the dog, if needful, with beef tea; and, if the bowels are at all relaxed, give the dog an astringent mixture. Clean straw, a warm dry kennel, and absolute rest, are also essential to recovery. *Chorea or Palsy* may be treated by a change to country air if the puppy has been in the town, and by giving from 3gr. to 5gr. of sulphate of zinc in a pill every day. The eyes may be best left to themselves; and, however bad they may appear, they will generally recover their brilliancy as the strength is restored. If not, apply a wash composed of 2gr. or 3gr. of nitrate of silver dissolved in 1oz. of distilled water, or the same proportions of sulphate of zinc and water.

Again: Cod liver oil has been tried with success. Give two table-spoonfuls daily.

A very old recipe is the following: Juice of pounded daisy roots, poured into the nostrils two or three times (once a day), and plenty of butter to eat, or, if necessary, forced down the throat.

A large table-spoonful of common salt is said to effect a cure if given at the commencement of the disease. If the first dose be not sufficient, it may be repeated after the lapse of one day.

Twelve grains of tartar emetic; 6gr. of opium; 4gr. Peruvian bark; 2gr. nitre; 2gr. camphor. To be mixed up into nine balls, and two to be given every other day to a full-grown dog, one to a puppy; has been advocated.

Again: One table-spoonful of castor oil and a piece of garlic bruised, given every day.

Epilepsy in.—If you perceive the symptoms of distemper coming on, with fits and shivering, take the dog in the yard and dash a pail of cold water at it; or even two pailfuls; then dry it, and cover with a blanket; four or five hours after give lukewarm beef tea.

Again: Strychnine, 1gr.; oxide of zinc, 24gr.; assafœtida, 24gr.; conserve of roses, q. s. Mix very accurately, and divide into twelve, nine, or six balls.

Again: First give, on an empty stomach, a whole red herring, with 1dr. of nitre, and ½dr. of camphor (cutting the herring open, and placing these ingredients in the middle); give him nothing for twelve hours afterwards. Give, next morning, fasting, from one to two spoonfuls of the following: Castor oil, three parts; syrup of poppies, one part; syrup of buckthorn, two parts. The syrup of buckthorn to be made with treacle, and the usual spices omitted. At night give one of the following pills (and one every night till the dog gets better) Digitalis, 8gr.; antimonial powder, 16gr.; nitre, 1gr. Divide into ten or twelve pills, and form each pill into a small bolus, with lard or butter. If the dog will not eat, force down beef tea with the chill taken off. The mixture may be still given about twice a week, so that the bowels may be kept moderately open. When the dog gets better, boiled mutton and the best of food must be given him, with a glass of good port wine daily.

Again: In the first instance give Barbadoes aloes 1dr. every other night for a week, and afterwards argent. nitras ¼gr. in aq. distil. ½oz. twice a day for nearly a month, with plenty of animal food, and gentle exercise every day when strong enough to take it.

Again: Give the dog every other day a wine-glass of decoction of bark, thirty drops of sal volatile, and twenty drops of laudanum.

Or, place the animal in warm water fifteen minutes, or bathe the loins with flannel saturated with very warm (not scalding) water; wipe him nearly dry, wrap him up in a warm blanket very closely and carefully, and place him near the fire, first giving him, however, tincture of opium, twenty drops; ether, thirty drops; castor oil, 1oz. Should this not operate, give every four hours a ball composed of calomel, 4gr. powdered opium, ¼gr.; oil of peppermint, one drop; aloes, 1dr.; and embrocate the loins with oil of turpentine, 2oz.; spirits of hartshorn, 2oz.; laudanum, 2dr.; sweet oil, 2oz. If the loins continue paralysed, have him electrified, or put a blister all along the spine, or apply a very large pitch plaister over the whole loins, reaching down over the upper parts of the thighs, and make him wear it two months or even longer.

Some advocate the following: If a large dog, give about a table-spoonful of ground or bruised carraway seeds stirred into his food twice a day; for a smaller dog proportionally less. He will require no persuasion to take it. The dog should be kept moderately warm and have plenty of good food, but not too much meat. Greaves are decidedly objectionable.

Some assert that paralysis is caused by overfeeding during recovery from distemper. The dog's appetite having become enormous, he will eat until he almost bursts himself. If allowed to feed himself at this stage of the disease to excess, it is possible he will begin to show symptoms of paralysis of the hind-quarters within twenty-four hours. If the power of motion be lost suddenly, costiveness mostly exists, and, if gradual, there may be diarrhœa, which mostly terminates in death. As a cure, give at night a dose of calomel and jalap—say five grains of the former and twenty of the latter, mixed; at the same time some stimulating embrocation must be applied to the back and hind legs, which must be well rubbed with it three or four times daily. Soap liniment, as used by veterinarians, does very well; at the same time he must be kept warm and dry until, and after, the calomel and jalap have operated. The rubbing in of the embrocation is to restore the circulation and bring back motion. Then he must be more sparingly fed. Take the portion for the day and give it to him at three times, and nothing more allowed. If he has a second attack, insert a seton. In the second, as in the first attack, it is only one of the many consequences induced by over-feeding, therefore he must be more sparingly fed for a long time afterwards.

Tonic when they begin to recover.—24gr. quinine; ¼oz. gentian powder; ¼oz. of bark in powder; 1½oz. of lemon juice, or eight drops of sulphuric acid. To be made into eight balls, and one to be given every other day.

Where a dog suffers from huskiness after distemper keep him in an airy kennel till the huskiness is quite gone, exercise being sure to cause a relapse. Give nourishing but mild food. Time will do more good than physic. If the dog continues weak, give bark and sal volatile.

EARS OF DOGS.

Abscess.—After letting the liquid out of the ear, with a syringe throw in a sharp solution of white vitriol.

Internal Canker.—This is caused by a foul state of body and injudicious feeding, without proper exercise; or by damp lodging-houses, damp litter, exposure in wet and cold weather, or frequent immersion in water. Newfoundland dogs and water-spaniels are particularly liable to be thus affected; yard-dogs, also, from being generally chained up five days out of six, and lying on the ground. In the first stage of the disease a cure is easily effected by using the following lotion morning and evening: Dissolve half an ounce of sugar of lead in a pint bottle of rose or soft water, and pour a small teaspoonful of this liquid gently into the dog's ear, rubbing it the while, and for a minute or two after, to prevent its being ejected. The lotion should be made just lukewarm, and the contents of the bottle be well shaken before used, The dog must have physic and proper exercise every day; not heating food, nor a damp bed to lie upon, and during hot weather plenty of clean water to drink; whey or buttermilk also, occasionally, if they can be obtained. The night before using the lotion for his ears, give the dog from two to four grains of calomel (according to his size), with from four to eight grains of compound scammony powder, mixed in lard or butter, or made into a pill with flour and water; and the following morning half an ounce of Epsom salts in some warm broth or an ounce of castor oil. As an alterative, a small teaspoonful of sulphur and cream of tartar should be given twice a week afterwards, until the canker disappears. It is a disease which should be taken at the commencement. A cap of linen should be placed on the dog's head to prevent his scratching the ear. If the disease does not give way to this remedy in a week, add fifteen to twenty grains of white vitriol. Ears to be well washed with soap and warm water, previous to commencing this lotion, and a dose of medicine given. Lotion to be poured into the ear from a warm spoon, so as not to alarm the ear.

Liquor plumbi, Aqua distil., of both equal parts. Keep the dog on a vegetable diet, and pour into the ear half a teaspoonful of the liquid every morning until the running ceases.

Apply a solution of alum and water. It should be just warmed so as to take off the chill, and a few drops must be poured into the ear, and worked about in it for a few minutes.

Put a piece of mercurial ointment into the dog's ear about the size of a horse bean; if the cure does not follow shortly, repeat it.

Some people advise a weak solution of muriatic acid (one drop in half a teaspoonful of water) to be poured into the ear once a day.

The simplest and most efficacious remedy is, however, a solution of nitrate of silver (ten grains to the ounce of water) poured into the ear once a day; the same care being exercised as to diet and food as is recommended above. If the disease is very bad, in addition, cut the hair off close at the root of each ear, and apply a blister twice weekly for a month.

External Canker.—Give the dog active purgative medicine, reduce his diet, and, as a general medicine, give him nitrate of potass five grains, tartar emetic one-eighth of a grain, in a pill or bolus twice a day. If the ear is very much inflamed, leeches may be applied to the inside with advantage.

Make a cap of calico and tie it both before and behind both ears under the throat. Dress the wound with yellow iodide of mercury, and keep on the cap night and day.

Or, pulverise a piece of alum the size of a walnut, boil it in half a pint of water (distilled), clean the scabs of the ears, and apply the solution with a large piece of sponge as hot as possible, hold the sponge on till cool; repeat it two or three times a day for three or four days; then apply, daily, the following mixture: a quarter of an ounce of butyr of antimony (poison) diluted in milk till it is of the consistency of cream. This mixture will only keep good four or five days, according to the temperature.

Again: Mix 1dr. of chloride of zinc with 1oz. of spermaceti ointment, and apply it with a camel-hair brush to the ulcerated ear (the sore being carefully washed first with warm water and sponge) about every other day The dog to be kept as free as possible from dust. If these sores are neglected they often become malignant.

Deafness.—In nine cases out of ten this arises from internal canker, but where no symptoms of this disease is apparent, act as follows: Wash the ears well with soft soap and warm water; if any wax is present, inject into them with a syringe sweet oil, in order to dissolve the wax. If no wax is present, apply behind each ear a blister of turpentine and ammonia (equal parts), and keep it open for a month.

Again: Price's glycerine, 1oz.; pure chloroform, 1dr.; four or five drops to be put into the ear night and morning, the ear being first well washed with warm water (no soap), and well dried; then use the above, taking care to shake the bottle well before using. The dog should be kept in for two or three hours after the application.

Wax.—If the dog is fat and foul, give him a purgative, and put a seton in his neck (high up), and wash the ear night and morning with a lotion composed of ½dr. of sugar of lead and 4oz. of decoction of oak-bark, syringing it within with the same, made warm.

Again: Apply externally at the root of the ear and back part of the head a blister, composed of the biniodide of mercury, once weekly, for five consecutive weeks; before the application of the blister cut the hair short at these parts, and bathe them with warm water. To the internal ear apply daily two or three drops of very diluted hydrochloric acid.

EYES.

Sore.—Wash the eyes daily with Goulard's extract; about an hour after which, with a long camel-hair brush, paint the eye and eyelids with a solution (distilled water) of nitrate of silver (5gr. to the oz.), immediately administer to the animal at night 3gr. of calomel, together with the same quantity of tarter emetic; give it concealed in a piece or pieces of meat, and in the morning an ounce of castor-oil. Keep the light from the eyes by means of a shade.

Again: Cold boiled water, 1oz.; laudanum, 30 drops; nitrate of silver, 4gr. Pour a drop or two every morning for a week into each eye.

Again: Give the dog a little aperient medicine every alternate day, feed him on cooling diet, and wash carefully the parts affected with a sponge dipped in lukewarm skim milk and water; then dry, and apply a little Poor Man's Friend—to be obtained at any chemist's.

Inflamed eyes may proceed from eating too much animal food, and from over exertion, cold, &c.; if from the former, they will be more difficult to cure. Let the dog's diet be good light food, such as bread and milk, and that given sparingly; give a purgative of jalap and calomel occasionally; wash the eyes clean, and with a camel's-hair brush apply, morning and evening, a very small quantity, about the quarter of the size of a pea, to the inside corner of the eyes, of Singleton's golden ointment (sold in small pots at nearly all chemists') for the human eye; if not procurable, ¼oz. of citrine ointment, used as directed above. The ointment will work itself into the eye and round the eyelids, and will appear to cause for the first day or two more inflammation, but that will eventually subside.

Try a wash composed of sulphate of zinc 6gr., water 1oz.

FEET.

Sore.—A quarter of an ounce of corrosive sublimate, reduced to a powder in a glass mortar; to this add, by degrees, 1oz. of spirit of wine; and, lastly, ½ pint of filtered water. Application: Shake up the mixture, then rub it slightly on the sore part twice a day, until inflammation has been produced; on this subsiding, a cure should be effected. Give a dose of opening medicine for a day or two while dressing. It is well to put on a wire muzzle for a short time after applying the lotion.

Again: Feed the dog entirely on biscuit, and give him 2gr. of calomel at night, and ½oz. of castor oil in the morning. After the effect of the medicine has passed off, see that the bowels are kept open; foment the affected feet with warm water night and morning; and, after the feet are dry, daub them with Goulard's extract, and put gloves on, in order to prevent the irritation caused to the sore foot by it coming in contact with the grit, &c., on the ground.

Again: Tincture of myrrh, ½oz.; paregoric elixir, ½oz.; water, ½ pint, Mix.

Lameness.—One and a half pounds of green vitriol (not blue), 1lb. alum, 2oz. verdigris, 1oz. sal ammonia; these to be well pounded, and put into a glazed earthen pipkin that will hold a quart or three pints. Put it upon a moderate fire, which you may increase till the drugs boil up two or three times; then take them from the fire, and set them to cool six or seven hours. Break the pipkin and take out the stone. It must be stirred with a piece of wooden lath all the time it is on the fire. Pound a piece of the stone about the size of a walnut, and melt it in a quart of rain or pond water. Shake the bottle well when used, pour some of it into a cup, soak the linen well in it, apply the linen in eight or ten folds; remember to keep it constantly wet.

Again: A speedy cure for pointers' and setters' feet which have become raw by the friction of heather or hard ground at the beginning of the shooting season is to wash the feet quite clean, and take care that not a particle of gravel remains; then powder them over with well-powdered resin, and rub it in very lightly.

Again: Take a small quantity of dry salt and make it into a lump; cover it with a piece of fine linen. Dry and wash clean the dog's pads, and apply a little rapeseed oil; then slightly dab the salt bags upon the pads, and let the dog remain until the oil is well soaked in.

Again: Get a couple of pair of doeskin boots for the dog, and buckle them on just above the paws. At first he may endeavour to eat them off, but a little aloes rubbed on the outside of the leather will prevent this. The boots should be taken off after exercise, and the feet washed in tan water, and a dessert-spoonful of the flowers of sulphur given in the mess every second day.

Again: Whenever dogs are worked in warm weather, and especially if the ground is dry, always bathe the animal's feet in salt and water; it will make them supple and prevent lameness.

Press the whole of the sole of the lame paw, and if there is a thorn the animal will try to withdraw the paw on the tender place being touched: if not, the disease may be in the joint. Let the joint be shaved closely with scissors, and blistering ointment rubbed in, and the leg so bandaged that the animal cannot lick it. If not get it fired by a veterinary surgeon.

Again: If there appears to be a great deal of local inflammation, a bath of mustard and warm water (bath heat) would be found very beneficial—say two table-spoonfuls of mustard to one gallon of water. If the fore feet only are affected, a bucket would be the best bath; but, if all the dog's feet are alike affected, a large wash tub would answer the best, confining the dog standing in the tub knee and hock deep for half an hour at a time, and keeping the water as nearly as possible at the same temperature by frequently adding small quantities of hot water. The dog should be kept quiet in a cool and clean stable or kennel. If the dog is fresh in condition, and to all appearance in a healthy state, with the exception of his feet, give in addition, every other day, a pill made as follows:—Take powdered jalap and compound extract of colocynth each 8gr., of calomel 4gr.; mix, divide into two pills, and give one every other day for a week. But if the dog is debilitated give 48gr. of extract of gentian, 48gr. of sulphate of iron; mix and divide into twelve pills, and give two every other morning two hours before feeding. If debilitated, give solid food twice a day; if robust, sheep's-head broth with the flesh of the head boiled down to a gelatinous substance, and feed once a day. If the swelling decreases and the cracks, if any, do not heal, apply the morning following the bathing this ointment—composed of powdered catechu 1oz., of powdered alum 2½dr., powdered white resin 1oz., olive oil 2½oz.; mix.

Again: Wash the feet in pot-liquor three times a day, and, when the inflammation begins to subside, touch the parts with a mixture of spirits of turpentine, tincture of myrrh, aloes, and friar's balsam, blended in equal quantities. This is a good recipe for overreaches, and wounds of every description for either man or beast.

FITS.

Fits in dogs frequently arise from a disordered stomach; for instance, if hounds are fed from a copper boiler, and not from an iron boiler, that will give the whole kennel fits. If you give a strong-constitutioned dog, who, however stale the flesh may be, will eat it, too much of that will give him fits. Give the dogs a table-spoonful of syrup of buckthorn, and when the effects of the physic are over, then let them be fed on something very nice and easy of digestion, and then see if the fits return. Distemper entails fits occasionally, to which the patient will always remain subject.

Again: Give purgatives every two or three days, and a large seton in the back of the neck. Keep it in for fourteen days, and every morning wash the sore and seton, then anoint with savine ointment, and stitch a bandage round the neck.

Again: Nitrate of silver 3gr., compound galbanum pill ½oz., made into twenty-four balls. Give one of these night and morning, and gradually increase the dose to two. Also occasionally a tonic, as follows: Camphor ½dr., citrate of quinine and iron ½dr., extract of gentian 2dr., cayenne pepper 24gr.; made into fifteen balls. Give great attention to the state of his bowels. Do not confine the dog in a kennel, but let him have liberty to roam about; on no account chain him; keep him well on flesh, rather than on meal; do not take him out with a horse, as it will possibly fatigue him.

Another method of treatment is the following: Moderate exercise should be at once substituted for too strong exercise. His food should be given to him in small quantities, and of good quality, avoiding vegetable matter. A strong counter-irritation should be set up by a seton in the dewlap, or, what might be better, produce a general eruption on the shaved head and crest, by tartar emetic and castor oil ointment. With the above treatment the patient should have, twice a day, 1½gr. Conf. Galbanum. Assafœtida alone is also beneficial. Worms may be the cause of the fits. A suspicion of this kind should give rise to investigation and the immediate employment of remedies calculated to remove these irritating animals. Should the dog have a recurrenee of the fit, give two table-spoonfuls of the castor-oil mixture, which is composed as follows: castor oil three parts, syrup of buckthorn two parts, syrup of poppies one part; and give afterwards for a day or two one table-spoonful of infusion of gentian and one table-spoonful of infusion of ginger, with a teaspoonful of sweet spirits of nitre. The infusion to be made in the following manner:—Take of ginger powdered one ounce, and boiling water one pint; macerate together for an hour, and then strain. Infusion of gentian to be made the same way.

In Bitches when Suckling.—Ether 1dr., laudanum ½dr., strong ale 2oz.; mix from a teaspoonful to a dessert-spoonful, according to size, every two or three hours.

GIDDINESS IN POINTERS.

Give ½oz. of salts and 1oz. of sulphur in a little warm milk; feed on light food, and give gentle exercise. Take half a pint of blood.

GLANDS, ENLARGEMENT OF.

Insert a seton in the submaxillary glands, and dress once a day (for three days) with the following: R. Ung. lyttæ, ½oz.; hydrarg. biniodid., ½dr. After which the following, also externally: R. Ung. terebinth, 1oz.; ext. belladonnæ, 1dr. Mix, and give the following internally throughout:

R. Potass. bicarb., 2½dr.; ammoniæ carb., 1dr.; potass. iodid., ½dr.; tinct. Belladonnæ, 2dr.; syrup, 8dr.; decoct. sarsæ. comp., ½oz.; mist. camph., ad., 7oz. Mix; a table-spoonful three times a day, in milk, with plenty of good food.

Again: Pass a seton over or near the swollen part, and give, three times a week, concealed in a piece of meat, 1 gr. potassio-tartrate of antimony.

HYDROPHOBIA.

The symptoms of a dog affected with rabies are, in the first place, restlessness, turning round before he will lie down, blood-shot eyes, anxious countenance, and a continual snapping at fancied objects; all this is to be seen some days before he gets very bad. Dogs subject to fits will be at one moment scouring the fields in apparently good health, then suddenly stand still, gaze intently and wildly at some fancied object, then suddenly fall into convulsions, from which (if a little water be dashed in the face) the dog will soon recover, and be as well next day as if nothing had happened. With a rabid dog, however, it is quite different. There are always premonitary symptoms, the most prominent of which are a depraved appetite, the dog eagerly devouring its own and human excrement, sticks, cinders, mud, and all kinds of filth, which in a healthy state it would avoid. (There is an exception to this rule in some breeds of spaniels.) The next important symptom, the most positive, is an insatiable thirst, and an eager craving after its own and other dogs' urine, searching in every corner, and wherever any other dog has wetted, greedily licking it up.

INFLAMMATION OF THE LUNGS.

Inflammation of the lungs is known by rapid breathing, strong pulse, anxious countenance, hot breath, and short cough; but the only certain sign is given by the stethoscope. Bleeding is practised from the neck-vein to the extent of three to six ounces, according to size. Tartar emetic and opium are the best medicines.

MANGE.

Mange is characterised by scaliness of the outer skin, by vesicles, and in some cases by pustules. Good and bad living, food of a rancid or stimulating nature, and feeding on salt meat, may be ranked among the chief exciting causes of this malady. Also close confinement in a too small or pent-up kennel.

Apply locally, turpentine, tar and oil, mercurial soap, or iodide of sulphur ointment; keep the animal and kennel clean; sprinkle powdered sulphur over the straw or shavings; attend to the constitution; administer calomel and aperient medicine; and, if the animal is poor in condition, follow the above treatment up with tonics and plenty of exercise.

Some say that in ordinary cases sulphur administered internally and externally is a sufficient remedy, internally with milk, and externally in the shape of ointment made up with lard; one part gunpowder added, is also very effective; to be well rubbed in where the hair is beginning to fall, and under the shoulders. When the disease is bad from neglect, stronger remedies may be applied, viz., equal parts of oil of tar and oil of olives, well rubbed in, but before any external remedies are applied, aperients must be given. Sulphur alone, or with cream of tartar, or half an ounce of salts or castor oil. If there be bad eruptions, do not apply any external remedy until the internal ones have caused the sores to die away, by their action on the constitution of the dog.

Green iodide of mercury ointment is almost a specific.

One ounce of Æthiop's mineral, 1oz. of cream of tartar, and 2dr. of nitre; divide into twenty balls, and give one night and morning.

Give some aperient medicine. Apply the following: 1lb. sulphur vivum, 1 quart train oil; mix, and rub the dog over carefully.

Mix together oil of tar, sulphur vivum, and train oil in equal quantities, to be well rubbed in. Also frequently give syrup of buckthorn and cream of tartar in his food or otherwise.

Oxymuriate of mercury 1½dr., sulphate of zinc 2dr., liquid pitch ointment 8oz., flowers of sulphur sufficient to form an ointment. Apply; shave off the hair first.

Again: Change the kennel, and wash with soft soap and washing soda in hot water. Put the dog in a warm place, with plenty of hay or straw. When the dog is dry, bleed him well in bad cases, and exercise him daily. Give every third day for nine days, 3gr. of calomel; feed on clear broths, and give two purgative balls in the nine days. Dress him over every two days with sulphur vivum mixed with lard.

Again: First wash with soft soap and hot water, then apply the following, kept bottled for the purpose: Corrosive sublimate ½dr., dissolved in 1dr. of spirits of salt; add 1 pint of water and 2dr. of tincture of assafœtida. To be well shaken.

Again: Wash with soft soap and hot water. Apply the following every two or three days: ¾ pint of turpentine, 1oz. alaba root, 1 quart stale beer. Give plenty of exercise.

Again: Three parts spirit of turpentine, and two parts linseed oil, well rubbed or brushed into the parts affected, every second or third day; the strength can be varied according to circumstances, such as the quantity of hair, stage of the disease, parts affected, &c.

Again: Tartarised antimony, 12gr.; extract of pareira ½oz. Mix and divide into twelve boluses, one to be given morning and night, fasting.

Some use equal parts of olive oil and tar oil mixed. The dog affected should first be well washed with warm water and soft soap; when perfectly dry, the mixture to be carefully and effectively rubbed in over the part of the body affected. After three days, wash again as before, and repeat the application. Two or three applications are quite sufficient for ordinary mange. The animal's bowels must be attended to—an occasional dose of castor oil, and an alterative powder administered every morning, viz., a teaspoonful of flowers of sulphur and black antimony (crude and powdered fine) in the proportion of ½oz. of antimony, to 2oz. of the sulphur.

Again: Use 1lb. soft soap, ½lb. washing soda, 2oz. black sulphur, 2 wine-glasses rectified spirits of tar, and 1 quart of hot water. Put one-quarter of the above mixture in a stone jar or bottles, ready for use, which keep in a washing-tub, and lukewarm water to dilute it to a strong lye. The dog is then put into the tub, a person well known to him holding him quiet, the hand, a sponge, or hay-wisp dipped in the lye, and the dog well washed and rubbed with it; he is then taken out and dried, with coarse towels (kept for the dogs alone) before a good fire. The dog is then put into a separate place, with new clean straw to nestle in. A little sulphur in his food for at least two days before the above bath generally helps the cure. An interval of six days is allowed to elapse, and then another bath is given, to make all sure.

Again: Twenty grains of sublimate dissolved in 2dr. of spirits of wine: add to which 1 pint of rain-water. To be well rubbed on the parts affected once a day at the commencement, and afterwards according to the appearance of the sores. Great care should be taken that the lotion be well rubbed on the skin, and not to let half or more of the liquid only touch the hair.

Again: Æthiop's mineral 1oz., cream of tartar 1oz., nitre 2dr. Divide into sixteen, twenty, or twenty-four doses, according to the size of the dog, and give one every morning or evening.

Again: Compound sulphur ointment 4oz., neatsfoot oil and spirit of turpentine, of each 1oz.

Or, compound sulphur ointment 4oz., spirit of turpentine 2oz.; or iodide of mercury 8dr., lard 8oz., spirit of turpentine 1oz. The use of each alternately is very efficacious.

As a change, glycerine ½oz., chloride of zinc 20grs., water 3½oz.

Red Mange.—Red mange is a superficial inflammation of the skin, which is characterised sometimes by generally diffused redness, and at other times by circumscribed patches. The patches are usually slightly swollen, and present a pimply surface, accompanied by increased heat. Upon the dispersion of the redness the top skin comes off in the form of scales.

This disease is non-contagious, and is produced sometimes by local irritation, more commonly by functional derangement of the digestive organs, and from long-continued absence of sexual intercourse; improper feeding also will cause this disease.

Some use one quart neatsfoot oil, 1½oz. white hellebore root (powdered), 1½oz. black brimstone. Mix in a bottle and shake well up before using. Give a little flowers of brimstone in a little milk inwardly. Take care the dog is not exposed to rain.

Again: Remove the dog from his companions, and place him in a clean well-ventilated kennel, wash him well with soft soap and water, give at night 5gr. of calomel, and the next morning an aperient draught; after which rub in daily the iodide of sulphur ointment, &c.

Again: Wash him well with soft soap and warm water, and then dress him with white vinegar. The vinegar to be well rubbed in and persevered with.

Again: Rape oil 1oz., black sulphur 1oz., liquid blister ½oz.

Again: Oil of tar, sulphur vivum, rape oil; mix equal quantities. Have the mixture *well rubbed* into the skin of the dog with the hands. Give the dog a dose or two of syrup of buckthorn.

Again: Sulphur 4oz., turpentine 2oz., train oil 2oz.; to be rubbed well in two or three times, a day intervening; and to be well washed with soft soap eight or ten hours after each dressing. With this, take the following powder in a piece of lard or butter: Calomel 4gr., jalap 20gr.

Again: Put 2oz. of tar and 4oz. of soft soap together at night; next day add 8oz. of flowers of sulphur and as much train oil as will make the compound as thick as cream. Just before using, add 1oz. of spirit of turpentine.

Again: 6oz. of hellebore powder, 12oz. of sulphur vivum, 2oz. of spirits of turpentine, 1 quart of train oil. This mixture to be well rubbed in under the shoulder and thighs, the dog having been previously prepared by medicine administered internally. The dog must be kept warm during three or four days subsequently.

Again: Give four or five drops of liquor arsenicalis with the food twice a day, and dress the skin with equal parts of turpentine and oil.

Or, two parts of sulphur ointment and one part spirit of turpentine.

Or, equal parts of sulphur, turpentine, and oil.

MISCELLANEOUS.

Bolus, to give.—With a large dog, the plan is to back him into a corner, then stride across him with the operator's back also turned against the wall, so that the dog's head comes out between the legs. Do not alarm him, but pat him, and encourage him in every possible way, then grasping the nose with the left hand, press the thumb and fingers against the cheeks as they cover the teeth, and the pain will cause him to open his mouth, the thighs holding the head firmly, and the wall preventing a retreat. As soon as the mouth is opened, drop the pill into it, and a once push it back as far as possible over the tongue with the forefinger of the right hand. Shut the mouth, and the pill is of necessity swallowed, if it has been pushed back sufficiently far. If the dog is a savage one, his jaws may be guarded by a towel above and below, held by his feeder striding him in the way above described, and then any one can administer the pill or bolus with the finger.

Cooling Medicine.—Cream of tartar, 20gr.; milk of sulphur, 80gr.; mix with lard, and give the last thing at night occasionally.

Liquor Arsenicalis, to make.—Take arsenic, in powder, 40gr.; carbonate of potass, 40gr.; distilled water, 10oz.; compound spirit of lavender, 2½dr. The three first are boiled together until the arsenic be dissolved, and when cold, the spirit of lavender is added and as much water as will make up the loss by evaporation to its original quantity of 10oz. This solution, therefore contains 4gr. in each ounce.

Marking Puppies.—Borrow a pair of pincers used by saddlers and shoemakers, and snip as many holes through the ear or ears with them as you please, noting number, from (thus, .·. ∷ ... ·⁖·) right or left side, or both, &c. The cartilage will never be replaced, and the cicatrices will always be visible to the searching eye.

Milk, to disperse.—To disperse the milk, rub the teats with palma christi oil, or goose grease.

Again: Rub in camphor dissolved in sweet almond oil.

Purgative.—Castor oil is a good medicine, but it should be combined with syrup of poppies. A very good mixture is composed of three parts castor oil, two parts olive oil, and one part syrup of poppies. Of this one table-spoonful is the dose for an average dog.

Seton in a dog's neck, to put.—Get a seton-needle; arm it with a whole skein of thread; with your left hand take as large a grasp as you can of the skin of the back of the dog's neck; pull it well up, and pass the needle through, taking care to avoid pricking the cervical muscles and filaments of nerves; draw the thread through; leave a loop sufficiently large to turn the skein twice round; knot it, and cut off the ends; anoint the part to be in the wound with savine ointment; sew a bandage round the neck, to prevent the dog's tearing himself; in twelve hours rip the bandage, turn the skein, wipe it, re-anoint it, and replace the bandage. Do this every twelve hours for ten days, and, in bad cases, continue it for a fortnight, or even longer.

Turpentine, to give.—Tie it up in a bit of thin bladder, and give as a bolus.

Vomit the dog, to.—Mix 1gr. of tartar emetic with lard or any other kitchen stuff, and smear the mouth or nostril all over. The dog will lick this off, and it will cause him to vomit. A third of a grain for a very small dog, 3gr. for a very large one.

NOSE.

Sloughing of the bone of.—Inject into the nostrils daily a very weak solution of chloride of zinc, say about a teaspoonful of Sir W. Burnett's disinfecting fluid to a pint of water. If this does not relieve the patient, increase the strength.

KENNEL LAMENESS.

This disease is a form of rheumatism.

Salt herring administered every morning is an antidote. The brine contains a large quantity of propylamine, a famous specific for rheumatism and disorders of the same class,

Again: Every morning take a red herring, score it down the sides and back, and rub in 2dr. of nitre; then cut it into pieces, and give it, either by itself or, if the dog will not eat it so, in a little food, just sufficient to induce him to take it. At night give 1dr. of powdered camphor in a ball made of flour. The dog should be allowed to fast for two hours after he has taken the herring. The kennels most subject to this disease are those which are built in situations where the subsoil is porous. The most certain remedy is to allow the dog to run loose.

Again: Give a salt herring fresh from the pickle once a day, and a powder composed of nitre and camphor as follows: nitre 30gr., camphor 40gr.; divide into twelve powders, one a day. Every attention must be paid to warmth and exclusion of damp from above or below.

Again: Give a small wine-glass full of cod liver oil three times per day.

Apply a liniment of turpentine, ammonia, and laudanum in equal proportions.

POISON.

Poisoned Dogs.—Hold the dog's head between your legs, open the mouth with a stick, and give a handful of common salt.

Strychnine, Antidote for.—If the poison has been only just taken, and no fits have occurred, the best remedy is tannin, in the form of pounded galls, or the areca-nut powder. But if the dog be already seized with tetanus, the only remedy is the permanganate of potash. Condy's fluid is the most convenient form for its administration. A wine-glass of Condy's fluid, slightly diluted, may be given. During the treatment the dog must be kept quiet and touched as little as possible.

It is stated that an egg poured down the throat is efficacious. The albumen acting as an antidote. A small dose of sulphate of zinc has also been recommended.

It is said that a few grains of camphor in an emulsion will counteract the perilous effect of strychnine and cause spasms to subside; and in the more advanced stages of lockjaw, a camphor bath and strong injection of the same has been found effectual.

Post-mortem Tests for Poisons in Dogs.—Potash will detect the presence of corrosive sublimate by producing a light yellow precipitate; and blue ammoniacal sulphate of copper will elicit a lively green if it encounters arsenic. The tests to be applied to the liquid contents of the dog's stomach.

PROLAPSUS ANI.

Prolapsus ani in dogs is generally seen in those of a weakly habit. Those reared by hand are particularly liable to it. Improper food, such as sour milk and stale kitchen slops, is a fruitful cause of this disease; indeed anything calculated to induce severe and lasting purgings is objectionable. In some instances worms, and the consequent irritation of the rectum, may be the cause.

The protrusion should be reduced as soon as possible with a little warm water and slight pressure. An injection may be used, made of 1gr. of sulphate of iron and 1oz. of water; or 3dr. of decoction of oak bark and 20 drops of tincture of opium. The dog's bowels should be kept moderately lax, with small doses of castor oil.

PULSE OF ANIMALS.

The following table is from Vatel: Table of the number of pulsations in a minute in various animals.—The horse, 32 to 38 (36 to 40, White); ox or cow, 35 to 42 (42 to 45, Clater); ass, 48 to 54: sheep, 70 to 79; goat, 72 to 76; dog, 90 to 100; cat, 110 to 120; rabbit, 120; guinea-pig, 140; duck, 136; hen, 140; heron, 200.

SHY FEEDERS.

Let the meat be given the dog bit by bit, and, if a mash, let an onion be put into it.

Again: Let another dog be held in a string close by whilst the dog is feeding; he will clear up quickly, lest the other should help him.

Or, give daily a ball containing 3gr. of gentian with 1gr. of calomel. To a dog with a cough give 1gr. of extractum hyosciami three times *per diem.* Place it on the tongue, where it will soon melt.

SKIN DISEASES.

Apply the following ointment: 4oz. compound sulphur ointment, 2oz. spirits of turpentine; or iodide of mercury 3dr., 3oz. lard, 1oz. spirits of turpentine; use alternately.

A good ointment is composed of sulphur, oil, and spirits of turpentine in equal parts.

Wash the animal with soft soap and warm soft water. Afterwards give him a dressing of Whitten's embrocation. It may want repeating a time or two.

Again: The bowels should be gently opened with three grains of calomel, and from a scruple to one drachm of jalap (according to the size of the animal), made into a bolus with water or syrup, followed up each morning and evening with a powder of carbonate of soda and sublimed sulphur, of each about ten grains; they may be either poured down with a little milk, or put into a quantity of the animal's porridge or broth. This, together with a lotion, composed of a dessert-spoonful of carbonate of soda, in a pint of soft water, to be rubbed into the affected parts once a day, must be persevered in. If any signs of debility or unthriftiness are present, about three grains of the pulverised sulphate of iron will form a most valuable adjunct and improvement to the internal medicine.

Again: Bleeding from the neck, half-pint; take calomel, 5gr.; scammony, 20gr.; Dover's powder, 10gr. Mix well. Give this dry on the tongue, thus: have your powder in a paper, open the dog's mouth, and spill it in as far back as you can. Shut the animal's mouth with one hand, and gently pinch his throat with the other. This will compel him to swallow. By this method no medicine is lost. Next morning give ½oz. of Epsom salts in milk; rub the dog well with sulphur and oil with a little gunpowder. The mixture should be only of the consistence of thick cream. Let him alone for three days; then wash well with warm suds and plenty of soda dissolved; and when the dog's coat is dry, repeat the medicine. Next day another rubbing, &c. Do this three times.

Again: The weakest kind of mercurial ointment should be used. It is apt to salivate dogs, and cause their teeth to fall out. Many dogs are destroyed by calomel. Sulphur ointment is perhaps better—or cold cream 1oz. powdered camphor 1dr.; melt these two last together.

Again: Oil of turpentine 1oz., vitriolic acid 2dr., mixed together in a gallipot; while hot add (mixed) hog's lard 4oz., and sulphur vivum 2oz., finely powdered, which must be well rubbed in with the hand, and then turn the dog into the kennel or any other warm place, with plenty of clean straw.

Again: Have the dog well washed with hot water and soft soap, after which well dry the animal and besmear the body all over with the iodide of sulphur ointment. After a few days again wash the dog and again apply the above ointment; repeat this treatment until a cure is effected. Feed on a vegetable diet, and give plenty of exercise. Give internally 5 or 6 drops of liquor arsenicalis in the animal's food twice a day

Scurf.—Two ounces acetic acid (London Pharmacopæia), 1dr. borax, and 5oz. soft water, or more, if found too strong. After washing the dog well in soap and warm water, when he is nearly dry, rub well into his skin some of the lotion, using a small sponge to apply it with, and taking care to keep it out of the eyes and off the skin where there is no hair.

A very cautious use of the ointment of green iodide of mercury, diluted with twice its weight of lard, will soon get rid of the scurf.

SPRAINS.

Rub in some turpentine and oil daily.

STRONG SMELLING DOGS.

In addition to giving them little or no meat, let small doses of pepsine (if expense is no object) be given occasionally, mixed with butter, or well rubbed into a piece of raw meat. This is an effectual corrective. A small piece of chalk should be kept in their water-pan, and they should be washed regularly once a week in water containing soda. From five to ten grains of cream of tartar, and half a drachm to a drachm of sulphur, mixed with butter, should be given once a month.

Again: Common oil, 1lb.; oil of tar, 2oz.; sulphur, 1oz. Place the animal for twenty-four hours on some clean straw in a warm place; he can then be removed to be well washed with hot water and soft soap. A few alterative pills would be of benefit. Give a good supply of clean straw and have his hutch well whitewashed inside, giving him a good dose of salts and little or no meat with his food, and plenty of fresh air and exercise.

SWELLINGS.

If the swelling is really a wen or tumour, and not an enlarged gland, nothing but the knife is likely to remove it. Iodide of potassium, given internally, in the dose of 4gr. twice a day, and rubbed in externally, mixed with lard, is the most likely application to do good.

THROAT.

Sore Throat.—Sweet oil, one teaspoonful; brown sugar, one teaspoonful; mix; give this and immediately after another teaspoonful of the sweet oil by itself.

Again: Clip the hair close round the throat, and bathe the part with hot water; rub dry, and apply iodine ointment. If the throat is ulcerated, apply solution of caustic (10gr. to the ounce of distilled water). Keep the bowels open.

VERMIN.

Fleas, &c., in Dogs, to Kill.—Take any quantity of cold water, adding to it a small quantity of the oil of vitriol (sulphuric acid) till you can fairly bear it on your tongue; then wash the dog all over with it, taking care that none gets into his eyes. One dressing will be found sufficient. This remedy has the great recommendation of being a clean one. The dog should be muzzled, so that he cannot lick himself.

Train oil mixed with spirits of turpentine, washed off the following day with soft soap, is another remedy.

Again: Sprinkle finely-powdered resin, or the leaves of wormwood, in his straw, or make him sleep on fresh deal shavings.

Or, wash with an infusion of walnut leaves in vinegar.

Strong mercurial ointment, aloes, sulphur, each one part; hog's lard, sixteen, will destroy fleas.

Again: An ounce of stavesacres flowers, boiled a quarter of an hour in a quart of vinegar.

Muzzle the dog whilst under treatment. Most of the above will serve for either ticks, fleas, or lice; the last is by far the most annoying. Three or four applications of tobacco-water, and a good washing with soft soap after, will effectually extirpate the vermin.

One drachm white arsenic, quarter pound soft soap, one gallon water; boil it for ten minutes, lather the animal well with it when cool, then wash it off him with clean warm water. There are many poisonous substances which, like arsenic, will destroy fleas; but they are all highly dangerous, from the dogs licking their skin, as well as by their absorption.

To kill or drive away fleas from a dog, rub a very small portion of mercurial ointment into each armpit every other day for about a week, and all the fleas will disappear. This is a very dangerous remedy.

The kennels should be thoroughly well painted with gas tar; this will to a degree limit the evil. Benzine collas also effects the purpose, but is rather expensive. Turpentine will also drive away the vermin, but is very irritating to the skin unless the dog be in good health. Some recommend oil. This will have the desired effect, but is apt to chill very tender dogs. Red deal shavings for the dog's bed will *prevent* fleas; if this should irritate the dog's skin, mix straw with it.

Again: Get some pitch-pine sawdust, after washing with tobacco-water, and put in the kennel for the dog to lie upon.

Again: To 8oz. of strong tobacco-water add 1oz. of sulphur and 1oz. of spirits of turpentine. Shake this up well, and apply it with a brush two or three times in the day. This is also an excellent dressing for red mange.

Again; Goose-fat, or any application of lard or grease, well rubbed into every part of the dog's coat, will cause all living ticks or lice to drop off the dog immediately. It should be done out in a field, and the dog allowed to exercise himself for half an hour previous to his return to the kennel.

Again: Dress the dog well with common lamp-oil, and put a little flowers of brimstone in it; this will kill either ticks or fleas. Let it remain on the dog a couple of days, and then wash it off with soap and water.

Again: Wormwood powder 1 oz., resin in powder 1dr., Scotch snuff 2oz., finely powdered camphor 2dr.; mix. Part the hair or comb it upwards, and sprinkle a little of this powder on it, smoothing down the hair again.

Again: Common oil 1lb., oil of tar 2oz., sulphur 1oz. Place the animal for twenty-four hours on some clean straw in a warm place; he can then be removed to be well washed with hot water and soft soap. A few alterative pills would be beneficial.

Again: Rub him over (particularly about the neck) with Scotch snuff mixed with lard—1oz. snuff to 4oz. lard. Lime-wash the kennel or dog-pen, and keep it clean.

Again: Having placed the dog nearly up to the throat in a tubful of tepid water, in which plenty of soda has been dissolved, lather him well with strong black soap. As soon as this has been removed, and he has been rubbed nearly dry with a hard towel, pick out the fleas one by one from his coat. To all appearance the creatures are dead; but it is not so. For the time being, however, the soap has rendered them quite insensible, and as each is removed it ought to be annihilated between the thumb-nails. Care must be taken to extend the search over every inch of the body, and to none more narrowly than the head and neck.

Again: Well rub in salt butter, and after an hour or two wash with soft soap.

Again: White hellebore root, bruised, 2oz.; boil gently in two quarts of soft water, down to one quart, and while it is so doing dissolve in boiled cold water a piece of corrosive sublimate the size of a nut-kernel; add this solution to the hellebore whilst it is warm, previously pouring the hellebore into an earthen vessel. When applying it, wash with soft soap at the same time.

Again: Let the dogs lie on deal shavings, and if you cannot get a fresh supply when wanted, throw one or two wineglasses of spirit of turpentine over those you have—say about once in a fortnight.

Again; Wash with soft soap and warm water. The addition of some carbonate of soda in equal quantity to the soap is an improvement.

Again: Procure six or eight gallons of gas-water from some gasworks. Put the liquid into a large tub. You must keep good hold of the dog while he is in the tub, and be sure to keep the water out of his eyes and mouth. You must place the dogs in a fresh kennel until their old one is thoroughly cleaned.

Again: Rub them well over with whisky.

Ticks.—Either white precipitate in powder or mild mercurial ointment will destroy ticks on dogs, the former being rubbed in dry, and in either case the dog being muzzled. To remove them from walls, rub together equal quantities of corrosive sublimate and sal ammoniac; then dissolve two ounces of the mixture in a gallon of water, and well wash the whole surface of the walls and floor several times, so that every crevice may be completely saturated. When dry brush over with caustic lime wash. If this operation be performed at the commencement of every summer, it will effectually eradicate the breed of ticks.

Again: One ounce of pepper boiled in a quart of water, to be applied after washing with the strongest soft soap.

Apply Scotch snuff steeped in gin.

Half a drachm of corrosive sublimate dissolved in 1oz. of rectified spirits of wine; then add one pint of rain or distilled water. Apply twice or thrice, allowing an interval of two or three days.

Wash with soft soap and common snuff.

Again: Take powdered stavesacre and oil, mix to consistence of thick cream; rub the mixture well into the dog; leave it on for twelve hours, and wash it out with soda and suds. Next day repeat rubbing and washing.

The best dressing for young whelps troubled with the small white lice is soft soap and soda (about one part in three of soda), boiled in a sufficient quantity of water to make it about the consistency of cream, well rubbed into the coat while warm, and washed off the next day. One dressing will generally suffice.

Rub the dog down with paraffin oil.

VOMITING OF BLOOD WITH OFFENSIVE PURGING, TO CHECK.

Mix 20gr. of powdered alum with half a pint of new milk, and give it a gentle boil; when cold, give a table-spoonful every hour.

WARTS.

The warts should be dressed every day for three or four days with an ointment made of one part of arsenious acid to four parts of lard.

Again: Have the warts removed with a knife, and the wounds touched with caustic, or (what is far better, and not so painful) apply lightly a hot iron.

Wet them well; and then rub in some orpiment. In a few days they will drop off. Corrosive sublimate powder is still more effectual, but it requires greater care.

WORMS.

The best vermifuge is powdered areca nut given when fasting at the rate of for puppies say half a nut and for grown dogs at the rate of two grains for every pound of the dog's weight after twenty-four hours fasting. The areca nut may be given either in good broth or as a bolus mixed with butter. Next morning give the dog a dose of castor-oil. Repeat every ten days until the worms are expunged.

Or you may give a teaspoonful of turpentine three times a day for three days. If turpentine be given to dogs for worms, it should be accompanied by a pretty strong dose of castor-oil to carry it through, otherwise it is dangerous.

Again: It is said that the spurge laurel (*Daphne laureola*, called by some wood laurel) is good. Hang the sprigs up to dry; grate as much as will lie upon a sixpence (for a small dog, fasting); administer, in lard, about the size of a walnut.

Again: Give scammony 4gr., calomel 2gr., twice for a week. Then give as much finely-powdered pewter as will lie on a shilling, once will be sufficient; or finely-ground glass (the same quantity as pewter), mixed in butter or lard, but this will want repeating perhaps four or five times.

Again: A clove of garlic should be boiled in a large wine-glass of milk, and given to the dogs bruised up in the warm milk. They take it very willingly. Four times the quantity would not injure a small dog.

Again: Mix 2dr. of the powder of areca nut with enough turpentine to make it into a pill; give it to the dog upon an empty stomach, and the following morning administer a small dose of castor-oil. If this does not quite cure, repeat the dose in a few days.

Calomel, from four to ten grains, according to the size and strength of the dog, with a dose of jalap the next day.

Again: As much finely-powdered glass as will stand on a shilling, and one teaspoonful of spirits of turpentine; well mix in a teaspoonful of goose-grease, give three times a week.

Again: Give the dog occasionally a pill of the size of a pea of Venice turpentine, taking care to work it off with castor-oil a few hours after.

From ten to twelve grains may safely be given to pups at weaning time even. After that give two grains for every week the pup is old, up to eight months, when he will take a drachm—the dose for a grown dog.

Again: Use 60gr. of jalap, 9gr. of calomel, 16gr. of golden sulphur of antimony, and lard sufficient to form four doses about the size of marbles. Give the dog a dose every other morning before his breakfast.

Take a few green branches of the common tree box, and bake them in a cool oven until they are sufficiently dry to pulverise, then sift it through some moderately fine muslin and give as much of the powder as will stand on a shilling (fasting) well mixed with butter or lard, and given on some bread; the powder cannot be too fine.

First, administer an active purgative—aloes and colocynth, in the proportion of 1 drachm of the latter to 5, 6, or 7 drachms of the former, as the case may require. For dogs, such as greyhounds, give—aloes, half a drachm; colocynth and gamboge, of each 1 scruple. When the action of this has declined, give a worm-ball.

Tapeworm.—The tænia, or tapeworm, is the most injurious of the intestinal worms. They associate in groups, like the others, but are not so numerous. They chiefly frequent the small intestines. They are sometimes apt to coil themselves, and form a mechanical obstruction, which is fatal to the dog. The means of expelling or destroying worms in the intestines of the dog, which rarely fails, without the slightest mischief, is the administration of glass, finely powdered. Not a particle of it penetrates through the mucus that lines the bowels, while it destroys every intestinal worm. The powdered glass is made into a ball with lard and ginger.

Another way: Give the dog about a teaspoonful of flowers of brimstone mixed with something nice, three times a week. If this is not effacacious, then ½oz. of turpentine beaten up with the yolk of an egg for a full-sized pointer.

Another recipe is: In two table-spoonfuls of treacle mix as much salt as will dissolve, administer it in one dose, and give, say two or three hours after, a dose of syrup of buckthorn or castor-oil. This recipe is for a large dog; reduce in proportion according to size. Keep the dog twenty-four hours previously without food.

Stonehenge, in his work, "The Greyhound," at page 144, gives a remedy: "Within the last few years, a remedy has been introduced into this country from Abyssinia, which destroys the tapeworm without any appreciable injury to the constitution, and acts equally well upon man and dogs. This remedy is the Kousso, of which four drachms to one ounce, according to the age or size of the dog, should be infused in half a pint of boiling water; the whole, when cold, should be mixed with a table-spoonful of lemon-juice, and given at night to a dog previously starved for twenty-four hours, and a dose of castor-oil administered in the morning. The remedy should be repeated at the end of a week, and again in a month or two. We have found prevention easier than the cure, and give cow-heel and sheep-trotter jelly along with Scotch oatmeal porridge (hasty pudding) well boiled. This mixture of food, with salt given amongst it at *each* meal (twice a day), keeps the dogs in good health, *and always fit to run;* and this food may be continued all the year round. Walking exercise when going about the grounds, and *carefully wiped dry* when wet, before putting into kennel—*i.e.*, a vacant stall in stable, or a slightly-raised bench, with water to lap at pleasure, with plenty of air in stable, either from ventilators or from a pane or two in the window being taken out, and wire-mesh nailed over all, to keep restless ones from chewing the window-frame. A sliding-board, to open or shut at the lower part of the window, may be substituted for this taking out of panes of glass. Mr. Temple's (the Lache, near Chester) simple remedy for dogs when ailing seems a good one, viz.: 'To have extra warmth of bedding, and a table-spoonful given him of the following mixture (kept ready in a soda-water bottle, as it might break a thinner glass)—3 parts of castor-oil, 2 of syrup of buckthorn, 1 of syrup of poppies; and, if dogs are not dosed with it at first, they will lap it of their own accord.'"

YELLOWS IN DOGS.

Symptoms of.—Fever with great thirst, drinking water greedily, and rejecting the same immediately after; loss of appetite, tumid hard belly, restlessness, accompanied by moaning, together with great debility, his legs failing to support him. The disease if taken in time, is easily curable; but, if neglected, a general corruption of the liver and bowels takes place, followed by a peculiarly fetid discharge; mortification then rapidly supervenes; and, eight or nine hours before death takes place, the dog is observed, without noticing anyone, "to wag his tail," as he was wont to do in his playful mood or when welcoming his master; but this time not so. It is a fatal symptom brought on by the inward convulsive working, the result of the mortification.

When yellows are fully developed, there is seldom time to act on the liver before death ensues. Prevention is the only safe means of treating this disease. The evacuations should be carefully watched, and whenever there is an absence of bile a dose or two of podophyllin should be given. For a small dog one-sixth of a grain is the dose.

Take a green laburnum stick, about six inches long, peel and scrape it thoroughly; simmer a quart of ale with the peel and scrapings in it until reduced to a pint; strain it, and drench the dog. The above is the quantity for a foxhound.

Again: Buy a pennyworth of Turpeth's mineral, and divide it into four doses. This for a pointer. Great care must be taken not to give too much as it is a deadly poison. Give it in a little butter made into a bolus.

Again: When the symptoms of this malady first present themselves, having well washed the animal with soft soap and warm water, place him in a basket containing a good bed of fresh straw, and remove him to a clean room, of which let the temperature be moderate, and the ventilation good. Sprinkle the floor also with chloride of lime. Feed him sparingly on a quite fresh and light diet, and administer daily on a piece of fresh meat (if possible) a powder containing ½gr. of potassio-tartrate of antimony and ½gr. of calomel.

Gross feeding without a reasonable quantity of vegetable diet, and little or no exercise, is one of the surest causes of the attack. It is contracted where the dog has not been thoroughly rinsed after having been washed with soft soap; for the dog invariably licks himself dry, swallowing that portion of the oil and alkali which has adhered to his coat. Dogs if not cared for after a day's wet covert-shooting, but allowed to seek the doorstep for a bed, and to be feed with greaves, are very liable to an attack of jaundice. A decoction of major celandine, prepared in a proportion of 1oz. of the stalks and leaves of the dried herb (to be procured at any herbalist's) to one quart of water, boiled to the colour of weak coffee, and given according to the size and strength of the dog—from a table-spoonful for a delicate lap-dog, to a claret-glassful for the Newfoundland—daily until the eyes have recovered their natural colour, is an effectual remedy. The dog should be kept warm and clean, and on light diet.

Again: No time must be lost the moment the symptoms are perceived. After bleeding (which should be in the proportion of 1oz. for every 8lb. weight, or one or two ounces from a very small dog, and seven or eight ounces of blood from a larger one), administer either of the following recipes: (1) Calomel, two or three grains, according to size of dog; jalap 10gr.; scammony, 4gr.: or (2) aloes, twenty to forty grains; calomel, two to four grains. Afterwards give the tonic balls (as alteratives). Tonic alterative balls; Mercurial pill, 1dr.: aloes, 2dr.; myrrh, benzoin, balsam of Peru, of each 1½dr.; to be divided into ten, fifteen, or twenty pills; one every evening, for jaundice, after the purgative medicine, as above (Blaine).

Again: Calomel, 2gr.; ginger, 1gr.; friar's balsam, fifteen drops; laudanum, five drops; in four teaspoonfuls of water, or honest beer if procurable; giving twice a week a small quantity of syrup of buckthorn and jalap.

Again: First of all, calomel, 4gr., to be given to the dog; then take rhubarb, 1oz.; aloes, ½oz.; Castile soap, ½oz.; Æthiop's mineral, ½oz.; the whole to be mixed up with syrup of buckthorn, and made into boluses about the size of a nutmeg. One to be given every morning for three sucessive days; then one every other day for a week. The dog must be kept warm.

Another: Open the bowels moderately, at least twice a week, with castor oil. This is a purge that does not produce a great amount of irritation or debility. Give an ounce of fluid magnesia every morning, and at night give four or five raw eggs in cold water, having first allowed the patient to fast for a few hours. The patient should, while under treatment, be kept warm and otherwise made as comfortable as possible. The diet should be sufficient, nutritious, and digestible. When a different class of symptoms present themselves—such as swelling of the belly, or gradual and continued emaciation, tending to induce a belief in the existence of dropsy or chronic disease of the liver—a modification of the above treatment will be necessary.

Again: Allow *no* cold water or anything hot; give, instead, cold beef-tea; force it down in *small* quantities at a time. Bleed (according to size), and shortly after give from one to two spoonfuls of the following purgative: Castor-oil, 3 parts; syrup of poppies, 1 part; syrup of buckthorn, 2 parts. The syrup of buckthorn to be made with *treacle*, and the usual spices *omitted*. In the evening give one of the following pills, and one every day until the dog gets better: Digitalis, 8gr.; antimonial powder, 16gr.; nitre, 1gr.; divide into seven, nine, or twelve pills; form each pill into a small bolus with lard or butter. Never give the warm bath in inflammation of the liver. In chronic inflammation of the liver: Calomel 20gr.; antimonial powder, ½dr.; myrrh, gentian, aloes, of each 2dr.; mix, and divide into fifteen, twenty, or twenty-five balls with lard or butter. One for a dose, occasionally. Too much calomel, however, destroys many dogs.

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